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1917/18

Series XXII No. 16

Bulletin of The University of Nebraska

ANNUAL CATALOG

OF THE

GRADUATE COLLEGE

INCLUDING THE

Graduate School of Education

THE LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

ANNOUNCEMENT

1917-18

Published by the University August, 1917

LINCOLN, NEBRASKA

The Bulletin of the University of Nebraska is published monthly in February, semi-monthly in March, semi-weekly in April, tri-monthly in August, and monthly in May and November of each year by the University of Nebraska. Entered at the Post-Office at Lincoln, Nebraska, as second-class matter under Act of Congress, July 16, 1894.

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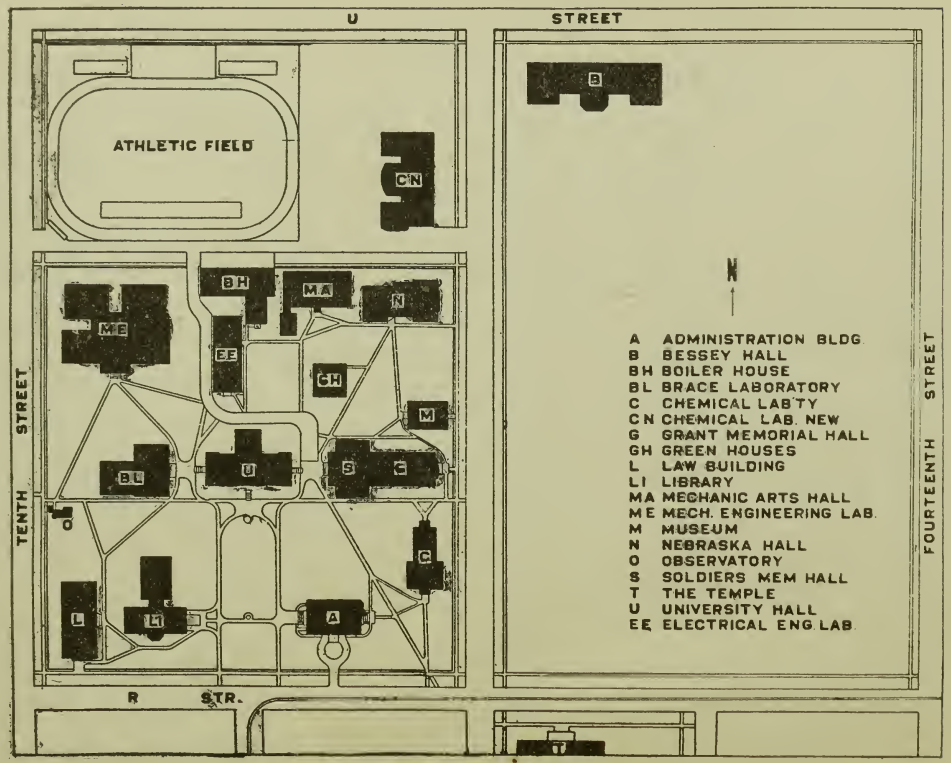
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GH GREEN HOUSES
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LI LIBRARY
MA MECHANIC ARTS HALL
ME MECH. ENGINEERING LAB.
M MUSEUM
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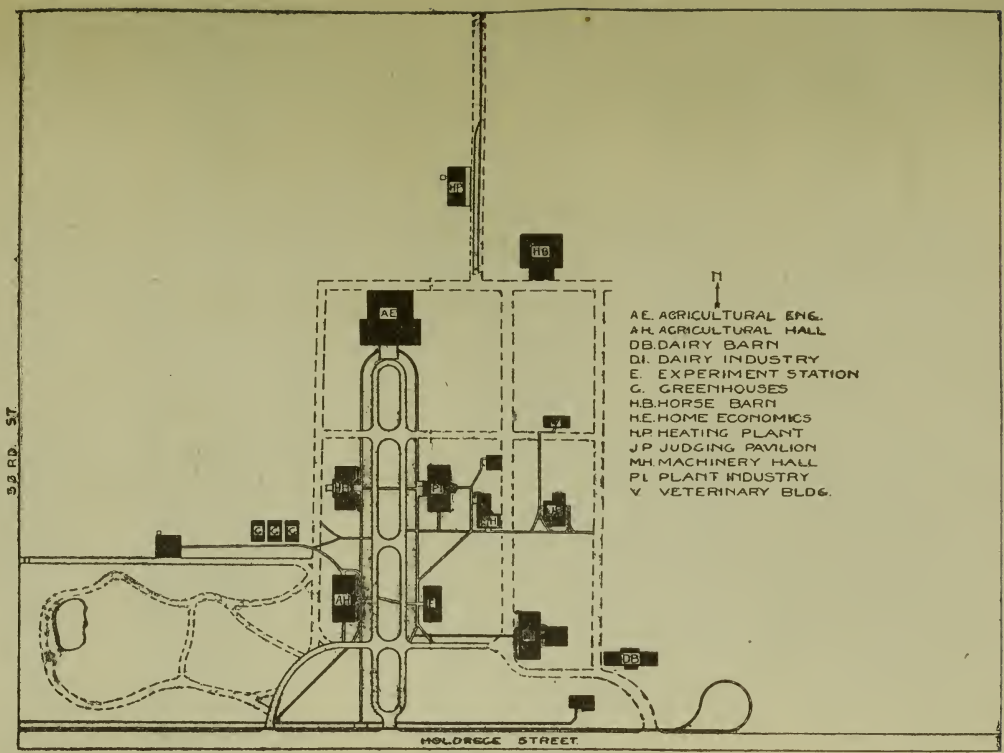
CITY CAMPUS



UNIVERSITY FARM CAMPUS

COLLEGES AND SCHOOLS OF THE UNIVERSITY

The University of Nebraska comprises the following colleges and schools:

The Graduate College, including the Graduate School of Education.
The College of Arts and Sciences, including the Schools of Fine Arts and Commerce.
The Teachers College, including the Teachers College High School.
The College of Engineering.
The College of Agriculture, including the Schools of Agriculture.
The College of Law.
The College of Medicine.
The College of Pharmacy.

The Nebraska Agricultural Experiment Station, the Nebraska School of Agriculture at Curtis, and the Experimental Substations at North Platte, Valentine and Scottsbluff, and the Agricultural Extension Service are under the supervision of the Board of Regents of the University.

For separate catalogs or information regarding any of the above colleges or schools, address

THE REGISTRAR,
THE UNIVERSITY OF NEBRASKA,
Lincoln, Nebraska.

THE UNIVERSITY YEAR

The regular session of the University embraces thirty-nine weeks, beginning the second Wednesday after the first Monday in September, and is divided into a first and a second semester. A summer session of eight weeks immediately follows the close of the second semester class work. Instruction is offered from September to August.

CALENDAR FOR THE GRADUATE COLLEGE

1917		
September 12-15	Wednesday-Saturday	First semester registration
September 15	Saturday, 8 p. m.	University reception to all students
September 18	Tuesday, 11 a. m.	Opening address by the Chancellor
November 27	Tuesday, 6 p. m.	Thanksgiving recess begins
December 1	Saturday, 12 m.	Thanksgiving recess ends
December 11	Tuesday	Regular meeting of the Board of Regents
December 22	Saturday, 12 m.	Christmas recess begins
1918		
January 5	Saturday, 12 m.	Christmas recess ends
Jan. 26-Feb. 2	Saturday-Saturday	First semester examinations
Jan. 30-Feb. 2	Wednesday-Saturday	Second semester registration
February 4	Monday	Second semester classes begin
February 15	Friday	Charter Day. Regular meeting of the Board of Regents. Twenty-second Annual Mid-winter Commencement
March 30	Saturday, 12 m.	Spring recess begins
April 6	Saturday, 12 m.	Spring recess ends
April 9	Tuesday	Regular meeting of the Board of Regents
June 1-8	Saturday-Saturday	Second semester examinations
Commencement Week		
June 9	Sunday	Baccalaureate sermon
June 10	Monday, 10 a. m.	Final recommendations for degrees by faculties
June 10-11	Monday-Tuesday	Class Day. Alumni Day
June 11	Tuesday	Regular meeting of the Board of Regents
June 12	Wednesday	Forty-seventh Annual Commencement
Summer Session 1918		
June 10	Monday	Summer Session classes begin
June 14-15	Friday-Saturday	Registration, Summer Session
August 2	Friday, 8 p. m.	Twelfth Annual Summer Session Commencement
1918-1919		
September 11	Wednesday	First semester begins (1918-1919)

The Graduate College

OFFICERS OF ADMINISTRATION AND INSTRUCTION

SAMUEL AVERY, Ph. D., LL. D., Chancellor of the University.

LUCIUS ADELNO SHERMAN, Ph. D., LL. D., Dean of the Graduate College and Professor of English Language and Literature. (*Head of Department of English Language and Literature.*)

[1]VANCIL KELSO GREER, LL. B., Registrar and University Publisher. (*Secretary of the Faculties.*)

FLORENCE IRWIN McGAHEY, A. B., Acting Registrar and University Publisher. (*Secretary of the Faculties.*)

HARTLEY BURR ALEXANDER, Ph. D., Professor of Philosophy.

JOHN EDWIN ALMY, Ph. D., Professor of Experimental Physics.

LEON EMMONS AYLSWORTH, A. M., Professor of Political Science.

GROVE ETTINGER BARBER, A. M., Professor of Roman History and Literature. (*Head of Department of Roman History and Literature.*)

ERWIN HINCKLEY BARBOUR, Ph. D., Professor of Geology. (*Head of Department of Geology.*)

FRANKLIN DAVIS BARKER, Ph. D., Professor of Medical Zoology and Parasitology.

GEORGE BORROWMAN, Ph. D., Associate Professor of Chemistry.

WILLIAM CHARLES BRENKE, M. S., Ph. D., Professor of Mathematics.

JUDD NOBLE BRIDGMAN, M. S., Associate Professor of Civil Engineering.

LAWRENCE BRUNER, B. Sc., Professor of Entomology and Entomologist of the Experiment Station. (*Head of Department of Entomology.*)

PHILO MELVIN BUCK, Jr., A. M., Professor of Rhetoric.

WILLIAM WESLEY BURR, B. Sc., Professor of Agronomy. (*Head of Department of Agronomy.*)

HOWARD WALTER CALDWELL, A. M., Professor of American History. (*Head of Department of American History.*)

ALBERT LUTHER CANDY, Ph. D., Professor of Pure Mathematics.

LEON WILSON CHASE, B. Sc., Professor of Agricultural Engineering. (*Head of Department of Agricultural Engineering.*)

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[1]Resigned.

GEORGE RICHARD CHATBURN, A. M., C. E., Professor of Applied Mechanics and Machine Design. (*Head of Department of Applied Mechanics and Machine Design.*)

GEORGE EVERT CONDRA, Ph. D., Professor of Geography and Conservation. (*Head of Department of Geography and Conservation.*)

CLARA CONKLIN, A. M., Professor of Romance Languages and Literatures. (*Head of Department of Romance Languages and Literatures.*)

BENTON DALES, Ph. D., Professor of Chemistry. (*Head of Department of Chemistry.*)

WILLIAM FRANCIS DANN, A. M., Professor of History and Criticism of the Fine Arts. (*Head of Department of History and Criticism of the Fine Arts.*)

ELLERY WILLIAMS DAVIS, Ph. D., Dean of the College of Arts and Sciences and Professor of Mathematics. (*Head of Department of Mathematics.*

CHARLES LYMAN DEAN, B. Sc. in M. E., Associate Professor of Mechanical Engineering.

CARL CHRISTIAN ENGBERG, Ph. D., Executive Dean and Professor of Applied Mathematics.

MINNIE THROOP ENGLAND, Ph. D., Assistant Professor of Economics.

OLIN JEROME FERGUSON, M. E. E., Professor of Electrical Engineering. (*Head of Department of Electrical Engineering.*)

HORACE CLYDE FILLEY, A. M., Professor of Farm Management. (*Head of Department of Farm Management.*)

FRED MORROW FLING, Ph. D., Professor of European History. (*Head of Department of European History.*)

MILLER MOORE FOGG, A. M., Professor of Rhetoric.

CHARLES FORDYCE, Ph. D., Dean of the Teachers College and Professor of Educational Theory and Practice. (*Head of Department of Educational Theory and Practice.*)

LAURENCE FOSSLER, A. M., Professor of Germanic Languages and Literatures. (*Head of Department of Germanic Languages and Literatures.*)

MARY LOUISE FOSSLER, A. M., Assistant Professor of Chemistry.

PROSSER HALL FRYE, A. B., Professor of Rhetoric. (*Head of Department of Rhetoric.*)

SHERLOCK BRONSON GASS, Ph. B., Associate Professor of Rhetoric.

PAUL HENRY GRUMMANN, A. M., Director of the School of Fine Arts and Professor of Modern German Literature.

AUGUST ERNEST GUENTHER, Ph. D., Professor of Physiology. (*Head of Department of Physiology.*) (In Omaha.)

WILLIAM GRANGER HASTINGS, A. B., Dean of the College of Law and Professor of Law. (*Head of Department of Jurisprudence and Public Law.*)

EDGAR LENDERSON HINMAN, Ph. D., Professor of Logic and Metaphysics.

JAMES DAVID HOFFMAN, M. E., Professor of Mechanical Engineering and Practical Mechanics. (*Head of Department of Mechanical Engineering.*)

VERNON LEO HOLLISTER, E. E., Associate Professor of Electrical Engineering.

[1]GEORGE ELLIOTT HOWARD, Ph. D., Professor of Political Science and Sociology. (*Head of Department of Political Science and Sociology.*)

ALICE CUSHMAN HUNTER, Ph. D., Assistant Professor of Roman History and Literature.

GUERNSEY JONES, Ph. D., Professor of English History. (*Head of Department of English History.*)

THEODORE ALEXANDER KIESSELBACH, A. M., Professor of Agronomy.

JAMES THOMAS LEES, Ph. D., Professor of Greek History and Literature. (*Head of Department of Greek History and Literature.*)

JAMES EDWARD LE ROSSIGNOL, Ph. D., Director of School of Commerce and Professor of Economics and Commerce. (*Head of Department of Economics and Commerce.*)

ALICE MARIE LOOMIS, A. M., Professor of Home Economics. (*Head of Department of Home Economics.*)

GEORGE ANDREW LOVELAND, A. M., LL. B., Professor of Meteorology.

GEORGE WASHINGTON ANDREW LUCKEY, Ph. D., Dean of the Graduate School of Education and Professor of Education. (*Head of Department of Education.*)

RUFUS ASHLEY LYMAN, A. M., M. D., Dean of the College of Pharmacy, and Professor of Physiology and Pharmacology. (*Head of Department of Physiology and Pharmacology.*)

EDWIN MAXEY, D. C. L., Ph. M., Professor of Public Law and Diplomacy.

BURTON EVANS MOORE, Ph. D., Professor of Physics.

CLARK EDMUND PERSINGER, A. M., Professor of American History.

HARLEY MARTIN PLUM, Ph. D., Professor of Agricultural Chemistry.

RAYMOND JOHN POOL, Ph. D., Professor of Botany. (*Head of Department of Botany.*)

LOUISE POUND, Ph. D., Professor of English Language.

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[1]Absent on leave.

CHARLES WILLIAM PUGSLEY, B. Sc., Professor of Agricultural Extension.

ELIZABETH IRENE REESE, A. B., A. M., Associate Professor of Romance Languages and Literatures.

FREDERICK WARREN SANFORD, A. B., Associate Professor of Roman History and Literature.

ANDREW D. SCHRAG, Ph. D., Associate Professor of Germanic Languages and Literatures.

ADDISON ERWIN SHELDON, A. M., Lecturer in Political Science and Director Legislative Reference Bureau.

CLARENCE AURELIUS SKINNER, Ph. D., Professor of Physics. (*Head of Department of Physics.*)

PHILIP KUHNS SLAYMAKER, M. E., Professor of Machine Design.

OSCAR VAN PELT STOUT, C. E., Dean of the College of Engineering and Professor of Civil Engineering. (*Head of Department of Civil Engineering.*)

FREDERICK AMES STUFF, A. M., Litt. D., Professor of English Language and Literature.

MYRON HARMON SWENK, A. M., Professor of Economic Entomology.

GOODWIN DE LOSS SWEZEY, A. M., Professor of Astronomy. (*Head of Department of Astronomy.*)

WILLIAM GEORGE LANGWORTHY TAYLOR, A. B., LL. B., Professor Emeritus of Economics and Commerce.

LOUIS BRYANT TUCKERMAN, Jr., A. B., Professor of Theoretical Physics.

FRED WILBERT UPSON, Ph. D., Professor of Agricultural Chemistry. (*Head of Department of Agricultural Chemistry.*)

GEORGE OLIEN VIRTUE, Ph. D., Professor of Economics and Commerce.

HERBERT HAROLD WAITE, A. M., M. D., Professor of Bacteriology and Pathology. (*Head of Department of Bacteriology and Pathology.*)

ELDA REMA WALKER, Ph. D., Associate Professor of Botany.

CHARLES WILLIAM WALLACE, Ph. D., Professor of English Dramatic Literature.

JOHN ERNST WEAVER, Ph. D., Associate Professor of Botany.

HUTTON WEBSTER, Ph. D., Professor of Social Anthropology

DAVID DAY WHITNEY, Ph. D., Professor of Zoology and Anatomy.

EDWIN MEAD WILCOX, Ph. D., Professor of Plant Pathology and Physiology and Plant Pathologist of the Experiment Station. (*Head of Department of Plant Pathology and Physiology.*)

WILLIAM ALBERT WILLARD, Ph. D., Professor of Anatomy. (In Omaha.)

ROBERT HENRY WOLCOTT, A. M., M. D., Professor of Zoology. (*Head of Department of Zoology.*)

HARRY KIRKE WOLFE, Ph. D., Professor of Philosophy. (*Head of Department of Philosophy.*)

Graduate Council

Professors Brenke, Chatburn, Fossler, Lees, Sherman, Upson, Webster, Wilcox, Wolfe.

Standing Committees

Examinations—Professors Wilcox, Webster.

Enrollment—Professors Lees, Upson.

Publication—Professors Brenke, Fossler.

Standardization—Professors Wolfe, Chatburn.

THE GRADUATE COLLEGE

Organization and History of the Graduate College—Graduate instruction in the University of Nebraska was organized in 1886. In September of that year courses were offered in thirteen subjects, including Sanskrit, Old French, Germanics, and Institutional History. In 1895 a Graduate School was organized, under a dean and a designated faculty. The number of students increased steadily, and in 1898 thirty-nine candidates received degrees. During the second period, lasting till 1909, many graduate subjects were added, including Astronomy, Bacteriology, Commerce, Education, English History, Geography, Physiology, and Sociology. In the legislative session of 1909 the charter of the University was amended, and the establishment of seven colleges, instead of the five colleges named in the charter, was authorized. By this act the Graduate School became the Graduate College of the University of Nebraska.

Purpose of the Graduate College—The Graduate College extends and enlarges the work of the undergraduate departments, in order to provide facilities for specialization and research. It enables students to employ themselves for two or more semesters on uncompleted subjects, or other work for which the discipline of college training has prepared them. It furnishes expert and standard preparation for those who expect to become investigators, consulting engineers, or teachers in academies and colleges. The Graduate College offers these privileges, which would be costly in an institution differently endowed, practically without expense to the student.

Degrees—The degrees of Doctor of Philosophy, Master of Arts, Master of Science, Agricultural Engineer, Civil Engineer, Electrical Engineer, and Mechanical Engineer are conferred on registered students, by the Board of Regents, upon recommendation of the Graduate Faculty.

ADMISSION TO THE GRADUATE COLLEGE

Classes of Graduate Students.—The Graduate College recognizes three classes of applicants: those who, having taken a bachelor's degree, wish to broaden their education without reference to higher degrees; those who wish to be candidates for advanced degrees, but are deficient in undergraduate preparation; and those who are eligible to candidacy, and wish to enter at once upon their special work. Those who do not wish to be candidates for an advanced degree are at once admitted, on evidence of graduation, to approved work in the Graduate College. Persons presenting first degrees in Law or Medicine or Theology may be admitted in this class. Those seeking advanced degrees, with insufficient preparation, are admitted to graduate standing, but must at once make up their deficiencies by taking courses in the undergraduate colleges. On completion of these assigned or

arranged courses, such students are recognized as applicants of the third class, and are eligible to candidacy for the degree desired.

Registration—Graduates of the undergraduate colleges of this University, or of other colleges having equivalent courses and requiring four years of standard preparation, who have been accepted and approved by heads of departments in charge of the subjects proposed, are registered by the Dean of the college for the degree they designate. For the degree of Doctor of Philosophy, the candidate must be registered for a major subject and an approvably related minor, or a major subject and two approvably related minors. Candidates for the degree of Master of Arts may be registered for a single subject, or for a major and a minor subject, or for a major and two minors.

Fees

The Secretary does not cash personal checks for accommodation. Checks on personal accounts will be received when written for the amount of the fees only. Parents or guardians are advised to write checks for students' fees and their other expenses separately; if this is not done, students should deposit in local banks and give their own checks for the amount of fees. Misapprehension as to the amounts charged for fees is thereby avoided.

Matriculation (payable on entering each college) $5.00
Being statutory, this fee cannot be refunded except when collected in error. It is also charged any student changing membership from one college to another.

Incidental, each semester 3.00
[1]Library, each semester 1.00
Diploma fee, for each advanced degree 10.00
Diploma fee, for each advanced degree (in absentia) 20.00
Agricultural Chemistry—Course 105, $3; 116, 130, 132, $5; 107, 108, 110, 112, 117, 120, for each credit hour a semester, $2.

Agricultural Engineering—Courses 5, 6, 7, $1; 8, 9, 10, 12, $3.

Applied Mechanics—Courses 15, 25, 26, $5; 18, $4; 16, 17, $3.

Bacteriology and Pathology—Courses 2a, 3, 4, $5.

Botany—Courses 5, 6, 20, $3; 11, 12, 13, 14, 27, 28, 29, 31, 33, 34, $1; 15, 17, 18, 21, 22, $2; 41, 42, 43, 44, 45, 46, for each credit hour a semester, $1.

Chemistry—Course 34, $5; 5, 15, 16, 27, $2; 7, 8, 39, 40, for each credit hour a semester, $1.

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[1]Graduate students taking laboratory work are charged the usual laboratory fees. A student paying any laboratory fee is not required to pay the library fee.

Civil Engineering—Course 2, $4; 5a, 6a, 8, $3.
Entomology—Courses 15, 16, 17, 18, for each credit hour a semester, $1.
Geography and Conservation—Courses 23, 24, $1.
Geology—Courses 27, 34, $1; 15, 16, $3.
Home Economics—Course 6, $5.
Horticulture—Courses 23, 24, $2.
Mechanical Engineering—Courses 16, 17, $6; 15, $5; 18, $2.
Physiology and Pharmacology—Course 10, $2; 9, 20, for each credit hour a semester, $2.
Plant Pathology and Physiology—Courses 117, 118, $3; 115, 116, for each credit hour a semester, $1; 125, 126, 127, 128, for each credit hour a semester, $2.
Zoology—Courses 32, 35, $2; 33, 34, 37, 43, for each credit hour a semester, $1.

The usual laboratory fees are required of those taking work in any science or engineering department. But any student who is able to devote only a portion of his time to his University work may, upon the recommendation of the Graduate Council to the University Secretary, be permitted to register free of charge after he has paid the usual dues and fees for four semesters, if a candidate for the degree of Master of Arts, and for eight semesters, if a candidate for the degree of Doctor of Philosophy.

REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

Candidacy for the degree of Doctor of Philosophy can in no case be completed in less than three years of graduate study. Two years of such work, in another institution, when carried with proper facilities and under competent instruction, may be credited by the Graduate Council; but the last year of candidacy must be spent in residence in the Graduate College. Each candidate must, at registration, satisfy the Graduate Council that he has a reading knowledge of French and German, or must arrange with the heads of these departments with reference to his deficiencies.

Preliminary Examinations—Not later than one school year before his final examination, each candidate for the degree of Doctor of Philosophy must submit to a preliminary examination. This examination may be waived, however, in the case of a candidate who has taken his Master's degree in this University.

Thesis—On completion of his studies, the candidate must present an acceptable thesis. The thesis, prepared upon a topic that has been approved by the professor in charge of the major subject, must show evidence of scholarly research. It must be typewritten, paged, and bound according to a prescribed form, which may be seen in the University library. It must be submitted to the professor in charge of the major subject at least two months before the intended graduation of the candidate. When it has

been approved by the examining committee, it will be placed in the Chancellor's office, where, during a period of not less than two weeks, it will be available for inspection by members of the faculty. A public defense of the thesis may be required of the candidate. After the thesis has been finally approved, the candidate must file an original and a duplicate typewritten copy of it with the librarian. The original copy of the thesis so filed may not be loaned, or pass from the custody of the librarian under any circumstances or pretext whatsoever. It is also required of the candidate that he have printed and deposited in the library of the University one hundred copies of his thesis, to be subject to the control of the librarian and the head of the department concerned. All theses and printed copies thereof must be provided with a cover and a title page lettered in a form prescribed by the librarian. The degree, however, may be conferred before the thesis is printed, provided a security bond be furnished and filed with the Secretary of the Board of Regents. The amount of this bond is to be named by the librarian, and any term of extension will be fixed jointly by the librarian and the Dean of the Graduate College.

Final Examination—After the thesis of the candidate has been accepted by the examining committee, he must pass a public examination in the subject offered for his degree. This examination is held before an examining committee of not less than three members, including the professors in charge of the major and minor subjects, supplemented if necessary by appointment from the graduate faculty.

REQUIREMENTS FOR THE DEGREE OF MASTER OF ARTS

Candidacy for the degree of Master of Arts[1] can in no case be completed in less than a year of resident graduate study. On completion of this study, the candidate must pass a public examination, and present an acceptable thesis, based upon some topic connected with his major subject.

Examination—After finishing his studies, each candidate must pass a public examination in the subjects offered for the Master's degree. By concession, a student unable to complete his candidacy in a single residence at the University may be examined in his major and minor studies separately on completion of either. The examination is conducted by a committee composed of the professors in charge of the major and minor subjects, and some member of the Graduate Council. If but a single subject is offered, an additional examiner is appointed from the Graduate Faculty.

Thesis—Each candidate for the degree of Master of Arts must present a thesis embodying, in connection with his major subject, the results of research, or the scholarly treatment of some topic. It must be typewritten, paged, and bound according to a prescribed form, which may be seen in

[1]The degree of Master of Science may be substituted for the degree of Master of Arts, on application, by candidates who have pursued approved courses in Theoretical or Applied Science.

the library of the University. It must be submitted for examination at least two weeks before the intended graduation of the candidate. After being approved and accepted, the thesis becomes the property of the University and is placed on file in the University library.

FELLOWSHIPS AND SCHOLARSHIPS

Fellowships and Scholarships, established in the different departments of the University, are available to students registered in the Graduate College. Fees are remitted to Fellows and Scholars for courses listed in the Graduate College only. Fees will be required for all undergraduate laboratory work. These positions are awarded to students recommended by the respective heads of departments. They are not gifts or benefactions from the State, but are means whereby services are rendered to the University and at the same time the holder is assisted in some special line of work. The instruction required of Fellows and Scholars is confined to the department in which they are pursuing advanced work. For additional information see the announcement of the various colleges.

The
Graduate School of Education
In the Graduate College

OFFICERS OF ADMINISTRATION AND INSTRUCTION

SAMUEL AVERY, Ph. D., LL. D., Chancellor of the University.

LUCIUS ADELNO SHERMAN, Ph. D., LL. D., Dean of the Graduate College and Professor of English Language and Literature. (*Head of Department of English Language and Literature.*)

GEORGE WASHINGTON ANDREW LUCKEY, Ph. D., Dean of the Graduate School of Education and Professor of Education. (*Head of Department of Education.*)

[1]VANCIL KELSO GREER, LL. B., Registrar and University Publisher. (*Secretary of the Faculties.*)

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WILLIAM CHARLES BRENKE, Ph. D., Professor of Mathematics.

LAWRENCE BRUNER, B. Sc., Professor of Entomology and Entomologist of the Experiment Station. (*Head of Department of Entomology.*)

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ALBERT LUTHER CANDY, Ph. D., Professor of Pure Mathematics.

GEORGE RICHARD CHATBURN, A. M., C. E., Professor of Applied Mechanics and Machine Design. (*Head of Department of Applied Mechanics and Machine Design.*)

GEORGE EVERT CONDRA, Ph. D., Professor of Geography and Conservation. (*Head of Department of Geography and Conservation.*)

CLARA CONKLIN, A. M., Professor of Romance Languages and Literatures. (*Head of Department of Romance Languages and Literatures.*)

BENTON DALES, Ph. D., Professor of Chemistry. (*Head of Department of Chemistry.*)

WILLIAM FRANCIS DANN, A. M., Professor of History and Criticism of the Fine Arts. (*Head of Department of History and Criticism of the Fine Arts.*)

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[1]Resigned.

ELLERY WILLIAMS DAVIS, Ph. D., Dean of the College of Arts and Sciences and Professor of Mathematics. (*Head of Department of Mathematics.*)

CARL CHRISTIAN ENGBERG, Ph. D., Executive Dean and Professor of Applied Mathematics.

FRED MORROW FLING, Ph. D., Professor of European History. (*Head of Department of European History.*)

MILLER MOORE FOGG, A. M., Professor of Rhetoric.

CHARLES FORDYCE, Ph. D., Dean of the Teachers College and Professor of Educational Theory and Practice. (*Head of Department of Educational Theory and Practice.*)

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PAUL HENRY GRUMMANN, A. M., Director of the School of Fine Arts and Professor of Modern German Literature.

JAMES DAVID HOFFMAN, M. E., Professor of Mechanical Engineering and Practical Mechanics. (*Head of Department of Mechanical Engineering.*)

[1]GEORGE ELLIOTT HOWARD, Ph. D., Professor of Political Science and Sociology. (*Head of Department of Political Science and Sociology.*)

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JAMES THOMAS LEES, Ph. D., Professor of Greek History and Literature. (*Head of Department of Greek History and Literature.*)

JAMES EDWARD LE ROSSIGNOL, Ph. D., Director of the School of Commerce and Professor of Economics and Commerce. (*Head of Department of Economics and Commerce.*)

RUFUS ASHLEY LYMAN, A. M., M. D., Professor of Physiology and Pharmacology and Dean of the College of Pharmacy. (*Head of Department of Physiology and Pharmacology.*)

RAYMOND JOHN POOL, Ph. D., Professor of Botany. (*Head of Department of Botany.*)

CLARENCE AURELIUS SKINNER, Ph. D., Professor of Physics. (*Head of Department of Physics.*)

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[1]Absent on leave.

OSCAR VAN PELT STOUT, C. E., Dean of the College of Engineering and Professor of Civil Engineering. (*Head of Department of Civil Engineering.*)

FREDERICK AMES STUFF, A. M., Litt. D., Professor of English Language and Literature.

GOODWIN DE LOSS SWEZEY, A. M., Professor of Astronomy. (*Head of Department of Astronomy.*)

GEORGE OLIEN VIRTUE, Ph. D., Professor of Economics and Commerce.

HERBERT HAROLD WAITE, A. M., M. D., Professor of Bacteriology and Pathology. (*Head of Department of Bacteriology and Pathology.*)

EDWIN MEAD WILCOX, Ph. D., Professor of Plant Pathology and Physiology and Plant Pathologist of the Experiment Station. (*Head of Department of Plant Pathology and Physiology.*)

ROBERT HENRY WOLCOTT, A. M., M. D., Professor of Zoology. (*Head of Department of Zoology.*)

HARRY KIRKE WOLFE, Ph. D., Professor of Philosophy. (*Head of Department of Philosophy.*)

Standing Committees

Course of Study—Professors Wolfe (*Chairman*), Barber, Fossler, Fling, Frye, Candy, Pool, Skinner, Virtue.

Graduate Teachers' Certificates—Professors Caldwell (*Chairman*), Alexander, Barbour, Chatburn, Dales, and the Registrar.

Advisory and Teachers' Employment—Dean Luckey, Professor Reed, and the Professor concerned with the student's graduate major subject.

Nominations—The Chancellor, Deans Luckey, Sherman.

THE GRADUATE SCHOOL OF EDUCATION

Organization—The Department of Education for the professional training of secondary teachers was established in 1895. Prior to that, courses in education had been offered by the Department of Philosophy. From the first, work in the Department of Education, except in the case of experienced teachers, was limited to students of junior, senior, or graduate rank. In 1908 the Teachers College and the new Department of Educational Theory and Practice were established, both, as in the Department of Education, covering work of the last two years of the college course, or an additional graduate year. Since 1897 many departments concerned with subjects taught in the high schools have offered graduate courses for the better preparation of teachers. In the spring of 1914 this individual effort in the training of teachers thru graduate study was organized into the Graduate School of Education.

Purpose—The Graduate School of Education is designed to meet three important needs: A stronger and more effective body of teachers; better educational material and more progressive scholarship; more healthful school conditions, better standards of measurement and more inspiring methods of instruction. It is, therefore, the purpose of the school, first, thru organized and directed graduate study to prepare (a) efficient teachers for the best high schools, normal schools, and colleges, (b) school administrators, principals, and superintendents, (c) experts in social welfare and teachers of special subjects; second, to organize and direct graduate study in education, to promote research and to stimulate investigation of the present practices of school and society; third, to furnish a laboratory or workshop in which disciplined schoolmen can unite with graduate students in working out the difficult problems of school administration and instruction.

Requirements—The Graduate School of Education is open only to graduate students who have met the conditions cf registration in the Graduate College. To obtain the graduate teachers' diploma the student must have received the master's or doctor's degree from the Graduate College in this institution. The major, or major and minors, leading to the above degrees are departmental functions and may be elected at will by the student. The major for the master's degree, in most departments, covers about twelve semestral hours of graduate study plus a thesis showing original investigation; the minor varies from eight to twelve semestral hours of classroom work. In addition to the major, or major and minor, which represent the subjects the student is preparing to teach, there are eighteen semestral hours of graduate courses in education and psychology, twelve in the former and six in the latter. This requirement may be reduced to twelve semestral hours, eight in education and four in psychology, provided the previous professional preparation of the student justifies.

Four of the twelve semestral hours in education and two of the six semestral hours in psychology may be elected by the student from graduate pedagogical courses offered in other departments. Students who have not had experience in teaching are advised to obtain credit for observation and practice-teaching in the University. Courses one and two in Education and one and two in Philosophy as offered in this University are prerequisites to the above professional requirements. The only fixed requirements are two semestral hours in adolescence and four in graduate experimental psychology.

Graduate Teachers' Diploma—The graduate teachers' diploma is conferred on those who, thru graduate study, have shown productive scholarship and special fitness for teaching in high schools, normal schools, and colleges. It is the highest recommendation offered by the University to the teaching profession, and covers only the subject or subjects that the student, thru at least a year of graduate study, is specially prepared to teach. The diploma is accredited in most of the states as sufficient credential upon which to base teachers' certificates.

To obtain the graduate teachers' diploma one must have fulfilled the requirements as outlined above. This may be accomplished in one year of graduate study—four summer sessions—by persons who are specially fitted for graduate study and who continue with their strongest interests, others may require a year and a summer session, or even two years. The master's or doctor's degree must precede or be granted along with the graduate teachers' diploma. The latter is based on one year of graduate study of not less than thirty semestral hours of credit. The time required to accomplish a given end depends largely on the preparation and ability of the student and the nature and importance of his subject. Much depends on the judgment of the student in selecting a major. Every subject has its value and its difficulties, some more than others. Most students will major in the academic subject they expect to teach, making education a minor. Only those students who are preparing to teach education in normal school or college are encouraged to major in that subject. Where graduate students are employed to assist the professors in class-work and conferences they obtain the most valuable practice-teaching. Most graduate departments have scholarships and fellowships open to properly prepared students in which the above assistance can be rendered.

Graduate students, not candidates for degrees or diplomas, will find in the Graduate School of Education excellent opportunity to renew their youth and increase their teaching-efficiency by profitable advanced study.

Courses of Instruction—The graduate courses of instruction leading to advanced degrees and the graduate teachers' diploma are usually so designated and scheduled in the different departments under the general heading "Courses of Instruction." When not so designated in the announcement the student, thru the advice of his major professor, will have

little difficulty in selecting appropriate academic courses fulfilling the major or minor requirements for advanced degrees, including the graduate teachers' diploma. In most departments graduate work is conditioned on previous undergraduate preparation in the same subject. To illustrate: "Students in the Graduate School of Education who elect a major in Botany must have had courses 1 and 2 (or their equivalent). They are recommended to take courses 3 and 4 and in addition courses 13 and 14, 33 and 34, 20, and Plant Pathology and Physiology 105."

In Mathematics: "Candidates for the graduate teachers' diploma with the master's degree in Mathematics are required to have completed as undergraduate work courses 1-6 inclusive, or their equivalent; and in graduate courses 21, 22, 23, 24, 25, 27."

In Entomology, the courses suggested are 3, 4, 5, and 6. Other departments make similar arrangement concerning graduate majors and minors. These are found scheduled in the different departments under "Courses of Instruction."

The professional requirements for the graduate teachers' diploma may be met from courses 5-14, and 36 in Education, 55 and 56 in Theory and Practice, a teachers' course in the major subject, and courses 11-16 in Philosophy.

Fees—There are no extra fees for enrolling in the Graduate School of Education, other than those required in the Graduate College. There is, however, a fee of two dollars for the graduate teachers' diploma.

Courses and Instruction

Offered by the Departments of the Graduate College

AGRICULTURAL CHEMISTRY

Professor Upson (*Head of Department*), Professor Plum, Assistant Professor Calvin, Instructor Rabak, Assistants Anderson, Almy, Magnuson

The Department of Agricultural Chemistry occupies quarters in Experiment Station Hall. The main laboratories are devoted to general inorganic chemistry, elementary organic chemistry, qualitative and quantitative analysis and general agricultural chemistry. Several private laboratories are provided for instructors and advanced students engaged in research.

The opportunities for graduate work leading to advanced degrees are excellent. In order to pursue successfully advanced work in Agricultural Chemistry students must have had thoro training in inorganic, organic, analytical and physical chemistry. Students intending to specialize in this department are urged to acquire this preliminary training as early in their undergraduate course as possible. A reading knowledge of French and German is also required.

Courses 105, 107 and 108 or their equivalent and courses 110 to 132 are required for the Master's degree. At least one year's resident work and the completion of a satisfactory piece of original investigation are also required. Students must also fulfill the general requirements of the University for the Master's degree.

COURSES

105. **Qualitative Analysis**—A study of the methods and tests employed in qualitative analysis, followed by work in the qualitative examination of salts, minerals, alloys, soils and agricultural products. Prerequisite: Course 100E or 102 or equivalent. Should be taken with or following course 115. Eight hours laboratory. One hour recitation. Three hours credit. First semester. Rabak

107. **Quantitative Analysis**—An introductory laboratory course in gravimetric and volumetric analysis. Primarily for students specializing in agricultural chemistry. Prerequisite: Course 105 or equivalent. One hour lecture. Eight to fifteen hours laboratory. Three to five hours credit. First and second semesters. Plum

108. **Special Methods of Quantitative Analysis**—Water, gas, organic elementary analysis, electrolytic methods, special mineral. Prerequisite: Course 107 or equivalent. Nine to fifteen hours laboratory. Three to five hours credit. First and second semesters. Upson, Plum

110. **Analysis of Agricultural Products**—A course in the quantitative analysis of grains, flour, fodders, fruits and dairy products. Prerequisite: Courses 101, 102, 103, 104 and 107 or their equivalent. One hour attendance. Eight to fifteen hours laboratory. Three to five hours credit. Second semester. Upson, Plum

112. **Analysis of Soils and Fertilizers**—Prerequisite same as for course 110. Two to five hours credit, depending on amount of time spent. Second semester. Upson, Plum

115. **Theories of Solutions**—Lectures and readings on the modern theories of solutions. The properties of colloids and of molecular solutions are considered in detail. Applications in other branches of chemistry and in other sciences are also considered. Prerequisite: Three semesters of chemistry and physics 11 and 12. Two hours lecture. Four hours read-in . Two hours credit. First semester. Upson

116. **Physical Chemistry**—Lectures, recitations and problems on the general properties of gases, liquids, solids and solutions. Reaction velocity and equilibria in homogenous and heterogenous systems. Some attention is given to the application of physico-chemical methods in the study of biological and soil problems. The laboratory work consists of exercises in physico-chemical measurements. Prerequisite: Physics 11 and 12 and quantitative analysis. Three hours lecture. Six hours laboratory. Six hours preparation. Five hours credit. Second semester. Plum

117. **Inorganic Preparations**—Laboratory exercises in the preparation of typical inorganic compounds. Some attention is given to compounds of agricultural and industrial importance. Prerequisite: General chemistry and quantitative analysis. Six to fifteen hours laboratory. Two to five hours credit. First semester. Plum

118. **Special Chapters in Organic Chemistry**—Lectures and readings on such topics as bivalent carbon, stereo isomerism, geometrical isomerism, electron conception of valence, carbohydrates and nitrogen derivatives. Prerequisite: Course 103 or equivalent and a reading knowledge of French or German. Two hours lecture. Two hours credit. Second semester. Upson

120. **Advanced Organic Preparations**—Preparation in the laboratory of a number of typical organic compounds. Special attention is given to methods, yield, and purity of product. Prerequisite: Courses 103 and 107 or equivalent and reading knowledge of German. Six to fifteen hours laboratory and reading. Two to five hours credit. First and second semesters. Upson

128. **Seminar in Agricultural Chemistry**—Discussion of problems and current literature of agricultural chemistry. Once a week thruout the year. Upson, Plum, Calvin, Rabak and Assistants

130. **Research in Soil Chemistry**—Five to ten hours credit. First and second semesters. Upson

132. **Research in Plant Chemistry**—Five to ten hours credit. First and second semesters. Upson

AGRICULTURAL ENGINEERING

Professor Chase (*Head of Department*), Professor Seaton, Associate Professor Brackett, Assistant Professor Baer, Assistant Professor Sjogren, Mr. Runnalls

COURSES

5. **Rural Architecture**—The arrangement of farm buildings and the farmstead, preparation of plans for unimproved farms and for rearrangement and additions to buildings on improved farms. Design and production of working drawings for the various farm structures. Design of beams and columns, method of construction and use of materials in timber, masonry and reinforced concrete work. Engineers. Two hours attendance. Four hours preparation. Three hours drawing. Three hours credit. First semester. Sjogren

6. **Irrigation and Drainage Engineering** (C. E. 12)—Sources of water supply, canals, seepage, irrigation by pumping, surveys and designs, legal and economic principles. Drainage: Field and class work in land drainage, surveys and preparation of plans and estimates of excavation, material and labor costs, study of drainage laws. Advanced engineers only. Three hours attendance. Six hours preparation. Three hours drawing. Four hours credit. Second semester. Stout, Sjogren

7. **Rural Architecture**—The arrangement, design and construction of farm buildings with special emphasis on planning the home, the farmstead, horse barns, dairy buildings, barns and yards, hog houses, granaries, soils, machine sheds, ice houses, fences, etc. For advanced students other than engineers. Two hours attendance. Two hours preparation. Six hours field work and drawing. Three hours credit. First semester. Chase

8. **Irrigation, Drainage and Rural Highways**—Irrigation from the water user's standpoint, requirements for different crops, source of supply, canals, seepage, pumping irrigation. Drainage: Study of different systems and methods of installation,—practice in the use of surveying instruments both in drainage and general field work. Rural highways, road laws and the construction and maintenance of roads. Advanced students other than engineers. Prerequisite: Agronomy 51. Two hours attendance. Two hours preparation. Five hours field work and drawing. Three hours credit. Sjogren

9. **Advanced Farm Machinery**—Laboratory work in the testing of field machines under various conditions. The testing of grinders, shellers, twine, etc. Prerequisite: Courses 3 and 24. Six hours laboratory. Two hours credit. First semester. Brackett

10. **Advanced Farm Motors**—The construction of motor testing apparatus and the complete tests of farm motors, both in the field and laboratory. Prerequisite: Course 4 or M. E. 10 and in connection with M. E. 16. Six hours laboratory. Two hours credit. Second semester. Seaton

11. **Domestic Engineering**—Studies in illumination and illuminating materials, freezing and heating materials, ventilating systems, water systems, sewerage and sewage disposal plants. Prerequisite: Physics 1 and 2 or 11 and 12; Chemistry 1 and 2. Three hours attendance. Six hours preparation. Three hours credit. Chase

12. **Domestic Engineering Laboratory**—Practice in plumbing, testing of fuels, heating systems, illuminating systems, ventilating systems, pumping systems, etc. Prerequisite: Course 11 or by permission. Six hours laboratory. Two hours credit. Chase, Sjogren

16. **Automobile Design**—Special study of current practice in design of the various parts. Drawings and specifications for manufacture by assembling standard products of established manufactures. Engineers only. Prerequisite: Course 15. Three hours attendance. Three hours preparation. Three hours designing. Second semester. Seaton

19. **Research Work in Rural Architecture, Farm Drainage and Rural Highways**—There is a broad field for original investigation in the following subjects; drainage, water supplies, lighting, heating, building materials, efficiency gained by proper arrangement of farm buildings, road construction and sewerage. Prerequisite: Courses 5 and 6 or 7 and 8. Six to fifteen hours laboratory or reading. Two to five hours credit.
Chase, Baer, Sjogren

20. **Research Work in Farm Machinery, Farm Motors and Farm Equipment**—The large equipment of machinery in the department gives an excellent opportunity for testing both in the laboratory and in the field, standardizing, traction tests, calibration and economic tests of both farm machinery and farm motors. Prerequisite: Courses 3 and 4. Six to fifteen hours laboratory or reading. Two to five hours credit.
Chase, Seaton, Brackett

AGRONOMY

Professor Burr (*Head of Department*), Professor Kiesselbach (Experimental), Professor Hopt, Assistant Professor Young, Assistant Professor Ratcliff, Assistant Professor Keim, Mr. Stewart, Mr. Ward and Assistants

COURSES

Seminar

101. **Agronomy Seminar**—Presentation and discussion of various agronomic subjects. Reviews of the latest and most important literature and data in agronomy. One hour attendance. One hour credit. Prerequisite: Courses 1, 2, 51 and 52. Open only to juniors, seniors and graduates. First semester.

102. **Agronomy Seminar**—101 continued. Second semester.

Experimentation

Students taking any of the following courses must have completed all general courses in Agronomy and Farm Management.

301. **Investigation**—Satisfactory work on some special line of investigation with assigned readings. Six to twenty hours laboratory. Thesis required. Two to five hours credit. First semester. Kiesselbach

302. **Investigation**—301 continued. Second semester.

303. **Methods of Investigation**—Compilation of experimental data. Correlation tables. Statistical methods. Six to twenty hours laboratory. Two to five hours credit. Kiesselbach

304. **Methods of Investigation**—303 continued. Second semester.

AMERICAN HISTORY

Professor Caldwell (*Head of Department*), Professor Persinger, Professor Maxey, Miss Barnes, Mr. Senning, Miss Reynoldson, Miss Frum, Mr. Sheldon

Objects—Graduate work in the department of American history affords opportunity to prepare for any one of the following four lines of work: (1) The teaching of American history in the best high schools of Nebraska and adjoining states, and in seminaries, academies, and smaller colleges. (2) Fellowships or instructorships in the older and large universities. (3) Investigational work in corporate, state, or national service. (4) Historical research and writing.

Time—From one to three (or more) years may be given to this preparation, under the direct advice and assistance of the instructors in the department, and culminating in the degrees of Master of Arts and Doctor of Philosophy. There are also exceptional opportunities for study in the collateral subjects of English and European history, political science and sociology, and economics and commerce.

Facilities—The University, State, and State Historical Society libraries afford a wide range of original material for work along many lines of historical investigation. Graduate students have free access to all these libraries, and in addition have for their use a seminary room in which are placed all books needed in their particular lines of research. Books not already on the shelves will be purchased or obtained from other libraries when necessary for thesis or other advanced work. Special seminary courses are offered; and investigation in the history of Nebraska and other states of the plains region will be undertaken and the results published from time to time.

General Requirements—Candidates for advanced degrees must present a good knowledge of general history, and at least 12 hours of American history above high school courses. Unless this amount of undergraduate preparation is actually presented, candidates for the Master's or Doctor's degree in this department should count on at least one full semester more of work than would otherwise be required for either degree.

Requirements for Master of Arts—Work for the Master's degree may be taken in the department as follows: (1) All the work for the degree, including the thesis, in the department. The minimum requirement is one full year's work, including a satisfactory thesis. (2) A major, sixty per cent, and the thesis in this department, and the remainder in either one or two other departments. (3) A double minor, forty per cent, or a single minor, twenty per cent, in this department, and a major and the thesis in some other department. In any case, the particular courses to be taken are arranged by the candidate and his instructors in such manner as to conform to the plans and preparation of each applicant.

Requirements for Doctor of Philosophy—The minimum for the degree of Doctor of Philosophy is three full years of graduate work, including the presentation of a satisfactory thesis. The work must be taken in at least two departments and may include three. For a major, sixty per cent of the time must be given to this department; for a double minor, forty per cent; and for a single minor, twenty per cent. The thesis in all cases goes with the major. The particular courses to be pursued are arranged on consultation between the candidate and the heads of the departments in which the work is to be taken. Those taking a major in this department are expected to have a good general knowledge of European history and a fair acquaintance with the principles of political economy, public law, political science, and sociology. The thesis must show a reasonable degree of original research and independent treatment.

COURSES

5. **Reconstruction and Industrial Movements, 1865-1892**—Open to those who have had 3 and 4, to juniors, seniors, and graduate students. Three hours attendance. Three hours credit. First semester.

Caldwell

6. **American History Since 1893**—Open to those who have had 5, and to juniors, seniors and graduate students. Three hours attendance. Three hours credit. Second semester. Persinger

7. **British Colonial Policy**—Open to those who have had course 2 and to juniors, seniors and graduate students. Two hours attendance. Two hours credit. First and second semesters. ————

11. **Teachers' Course in American History**—Review and organization of the subject matter of high school American history from 1492 to 1823; methods of high school history teaching; equipment, aids, etc.

Five hours attendance. One to one and one-half hours preparation for each recitation. Three to four hours credit. First semester. Persinger

12. **Teachers' Course in American History**—11 continued. Subject matter of American history from 1824 to present time. Three to four hours credit. Second semester. Persinger

16. **Constitutional History of the United States**—Evolution, formation, adoption, and interpretation of the constitution. Open to law students and to juniors, seniors and graduate students. Three hours attendance. Three hours credit. Second semester. Senning

21. **Advanced Course on American and Nebraska History of 1893 to 1897**—Open to juniors, seniors and graduate students. Semi-research course on national and correlated state history of the populist and free-silver period. Two hours attendance. Two hours credit. First semester. Persinger

22. **American Diplomacy** [Public Law 10]—Organization of Department of State and of diplomatic service. Methods. Problems and controversies growing out of them. Change in our diplomatic policy. Two hours attendance. Two hours credit. Second semester. Maxey

23. **Seminary**—For graduate students and special students who may be admitted to the course by the instructor. Study of library organization, bibliography, and methods of research. Reports on thesis and assigned topics, and lectures by invited specialists. Two hours attendance. Credit will vary with the amount and character of work done. Every year. Caldwell

24. **Seminary**—Course 23 continued. Second semester.

25. **Expansion of the American Nation and People**—Territorial acquisitions, treaties, problems, effects; westward movements—the frontiers; changes in and development of an American people; characteristics. An advanced course open to juniors, seniors and graduate students. Thesis work and study in the sources will be emphasized. Three hours attendance. Three hours credit. First semester. ————

26. **The Negro Problem under Slavery and Freedom, 1600-1915**—The history of the negro race in the United States; slavery—its development and problems. Emancipation and the negro under freedom; present conditions and problems. An advanced course open to those who have had courses 1 and 2 and to juniors, seniors and graduate students. Three hours attendance. Three hours credit. Second semester. Caldwell

33a. **Seminary on Nebraska History, Politics and Economics**—A research seminar in the history, political science, sociology and economics of Nebraska. Open to juniors, seniors and graduate students. Thru the Nebraska Legislative Reference Bureau scholarships of one hundred dollars and up will be awarded to members of this course whose merits justify it, or whose research papers prove to be usable by the Bureau.

Two hours attendance. Two hours credit. Given every year. First semester. Caldwell, Sheldon

34a. **Seminary on Nebraska History, Politics and Economics**—33a continued. Second semester.

37. **Graduate Conference**—Meeting of professors, fellows, scholars and graduate majors for discussion of professional or technical subjects, book reviews, methods, etc. No credit. First semester.

38. **Graduate Conference**—37 continued. Second semester.

APPLIED MECHANICS AND MACHINE DESIGN

Professor Chatburn (*Head of Department*), Professor Slaymaker, Associate Professor Rasmusen, Associate Professor Mickey

COURSES

5. **Machine Design**—Elementary design of shafting and shaft couplings, pulleys and fly-wheel, power-screws, bearings and guides. Nine hours attendance and drawing. Prerequisite: Courses 1, 2, 3 and 14. Three hours credit. First semester. Slaymaker

6. **Machine Design**—Each student makes a number of complete designs, studies constructive details, makes calculations to determine strength of parts and estimates cost. Nine hours attendance and drawing. Prerequisite: Course 5. Three hours credit. Second semester. Slaymaker

8. **Steam Engine Design**—Working from an assumed indicator card, each student designs the principal dimensions of a high-speed automatic cut-off engine and the details of assigned parts. Reports upon each particular design. Six hours drawing a week. Prerequisite: Course 5. Two hours credit. Second semester. Slaymaker

13. **Stereotomy**—Descriptive geometry applied to problems in stone cutting and the necessary patterns, bevels and developments, and to the designing of forms for the manufacture of artificial stones. A study of the shapes of stones in structure having plane, curved and warped surfaces, as used in architectural, engineering and military operations. Prerequisite: Courses 1 and 2. Six hours drawing and laboratory. Two hours credit. First and second semesters. Chatburn

14. **Theoretical and Applied Mechanics**—Principles of kinematics, statics and kinetics. Prerequisite: Mathematics 3. Three hours attendance. Six hours preparation. Three hours credit. First and second semesters. Chatburn, Mickey

15. **Mechanics of Materials**—Resistance of materials, including reinforced concrete; mechanics of beams, columns, shafts, etc.; laboratory experiments. Prerequisite: Course 14. Three hours attendance. Six

hours laboratory. Six hours preparation. Five hours credit. First semester. Chatburn, Mickey

16. **Mechanics of Materials**—Course 15 abbreviated for students in the Agricultural, Electrical and Mechanical Engineering groups. Prerequisite: Course 14. Two hours attendance. Three hours laboratory. Four hours preparation. Three hours credit. First and second semesters. Chatburn, Mickey

17. **Cement and Concrete Testing**—Classification, composition, manufacture, inspection, sampling and specifications. Practical testing of cement, mortars, concretes, and other materials of construction. Prerequisite: Course 14. One hour attendance. Three hours laboratory. Two hours preparation. Two hours credit. First and second semesters. Mickey

18. **Materials of Construction**—Manufacture and general properties. Mechanical properties of materials as revealed by actual tests. Comparison of tests reported by other laboratories. Continuation of tests begun in course 17. One hour attendance. Three hours laboratory. Two hours preparation. Two hours credit. Second semester. Chatburn, Mickey

22. **Graphic Statics**—Elements of graphic statics applied to engineering construction. Prerequisite: Course 14. One hour attendance. Six hours drawing. Two hours preparation. Three hours credit. Second semester. Chatburn, Rasmusen

23. **Applied Descriptive Geometry**—Advanced course in mechanical drawing. Practical applications of the principles of descriptive geometry. Shades, shadows and perspective; tinting and stippling. Prerequisite: Courses 1 and 2. Three, six or nine hours drawing a week. One, two or three hours credit. First and second semesters. Rasmusen

25. **Road Materials Testing**—Examination, classification, and testing of road and pavement materials including rock, gravel, sand, clay, earth, paving brick, wood block, stone blocks, oils, asphalts, and tars. The testing of cement concrete, bituminous concrete, and sheet asphalt. The building of a miniature road or pavement model illustrating the successive steps of construction, as well as the finished road or pavement. Prerequisite or parallel: Course 14, and C. E. 21. One hour attendance and two hours preparation. Three hours laboratory. Two hours credit. Additional credit may be earned by special arrangement. First and second semesters. Mickey

26. **Road Materials Testing**—Course 25 continued. Six hours laboratory. Two hours credit. First and second semesters. Mickey

27. **Specifications and Working Drawings**—The growth, cutting, seasoning, working, and finishing of woods; structural and decorative properties; detailing on a large scale various parts, such as walls, roofs, cornices, doors, windows, stairs, etc. Plans, elevations and details of small dwelling

house; specifications and estimate of cost. Two hours lecture. Four hours preparation. Six hours drawing. Four hours credit. First semester.
Slaymaker

28. **Specifications and Working Drawings**—Foundations of stone, brick, concrete, and piles; kinds of masonry and external finish; brick-masonry, its materials and bonds; terra-cotta design, etc. Detailing of columns, beams, girders, and footings; joints and connections; use of architectural handbooks. Two hours lecture. Four hours preparation. Six hours drawing. Four hours credit. Second semester. Slaymaker

29. **Engineering Freehand Drawing**—A course specially planned to meet the needs of students in Engineering and Physics. Elementary principles of perspective and object drawing. Two hours studio. One hour credit.

30. **Engineering Freehand Drawing**—29 continued. Two hours studio. One hour credit.

31. **Perspective**—Geometrical construction, principles of mechanical drawing, projection and isometric drawing. For students in the School of Fine Arts. One hour attendance. Eight hours drawing. Three hours credit. First semester. Rasmusen

32. **Perspective**—31 continued. Elements of descriptive geometry, theory of perspective, shades and shadows. Prerequisite: Course 31. One hour attendance. Eight hours drawing. Three hours credit. Second semester. Rasmusen

34. **Advanced Mechanics**—Open to students who have completed course 14 or Mathematics 4. Three hours attendance. Six hours preparation. Three hours credit. Second semester. Chatburn

400. **Thesis**—Open to approved seniors. Three to five hours credit.

ASTRONOMY

Professor Swezey (*Head of Department*), Professor Loveland, Professor Brenke

The Astronomical Observatory with its telescope and other instruments furnishes to elementary students an opportunity to study at first hand the more interesting heavenly bodies. They are given some practice in such exercises as finding accurate time by the stars, determining the latitude of the Observatory, and recognizing with the spectroscope the various elements present in the sun and stars. For advanced work the telescope is equipped with photographic, photometric and spectroscopic appliances; the meridian circle, zenith telescope, transit instrument, and sidereal clock and chronometers furnish facilities for the more important problems in the astronomy of precision.

The location on the campus of the United States Weather Bureau with its self-registering instruments and its daily compiling and printing of a weather map add much interest to the study of meteorology. A complete series of the daily weather maps for many years furnish original data for all sorts of climatological studies.

Master of Arts—Any of the courses offered to graduates and comprising six hours credit may constitute a minor for a student who takes two minors for his degree. Any two such courses may be taken as a single minor. Two such courses and a thesis constitute a major.

Doctor of Philosophy—The department does not undertake major work for this degree, but the courses offered for the degree of Master of Arts may be chosen as minors by candidates for the doctorate taking their majors in other departments.

COURSES

11. **The Astronomy of the Earth**—Closely related to physical geography. The earth as a planet. Its hydrosphere and atmosphere. Latitude, longitude and time. Map projections of the earth. The tides. Origin of the earth. Two hours credit. First semester. Swezey

12. **The Sun and the Earth**—Similar to course 11, but dealing with the sun's relation to the earth. The sun's control of climate in the different zones. Day and night in the different zones and seasons. Solar and terrestrial magnetism. Revolution of suns and planets. Two hours credit. Second semester. Swezey

13. **Timekeeping**—The use of the transit instrument in finding accurate time. Designed incidentally to fit the student to regulate the time service to the observatory. Two hours credit. First semester. Swezey

14. **Special Problems**—Similar to course 13, but may precede it. Two hours credit. Second semester.

BACTERIOLOGY AND PATHOLOGY

Professor Waite (*Head of Department*), Mr. Vose

As requirements for registration in this department for advanced degrees, the applicant must have completed work equivalent to that of a general scientific course in this University. The ability to read German and French is necessary. Before registration for an advanced degree the candidate must consult the head of the department.

Master of Arts—Second minor: Courses 2a and 3, or 2a and 4. First minor: Courses 2a and 3, or 2a and 4 and its equivalent along some special line of research. Major: Advanced work following the courses outlined above with a thesis.

Doctor of Philosophy—Minors: The minimum requirement will be the equivalent of six hours of class work approved by the head of the department. Major: The candidate must have a thoro knowledge of general bacteriology equivalent to that required for the degree of Master of Arts. In addition to this he must have pursued and completed some original problem and must embody the results of his work in a thesis. The minimum time requirement must be at least that required by the University for the degree.

2a. **Elementary Bacteriology**—An introduction to the study of bacteriology. The relation of bacteria to other organisms. Their morphology and structure, chemical composition, and chemical changes which they produce. Two hours attendance. Four hours laboratory. Two hours credit. First and second semesters. Waite, Vose

Courses 3 and 4 must be preceded by course 2a.

3. **Dairy Bacteriology**—Sources of bacteria in milk. Lactic and butyric acid fermentations, peptonizing, rennet-forming and butyric acid-producing bacteria. Abnormal fermentations giving rise to slimy, bitter, red, blue, yellow and green milk. Relation of milk to spread of tuberculosis, typhoid fever, and other diseases. Sterilization and pasteurization. Bacteria in butter making. Microörganisms concerned in the production of cheese. Two hours attendance. Four hours laboratory. Two hours credit. First semester. Waite, Vose

4. **Agricultural Bacteriology**—The nitrogen problem. Bacteria in ammoniacal fermentation, nitrification and denitrification. Bacteria as a means of reclaiming nitrogen lost from the soil. The employment of pure cultures in growing leguminous plants. Azotobacteria. Two hours attendance. Four hours laboratory. Two hours credit. Second semester. Waite, Vose

BOTANY

Professor Pool (*Head of Department*), Associate Professor Weaver, Associate Professor E. R. Walker, Associate Professor L. B. Walker, Instructor Hannah, Mr. Fitzpatrick

COURSES

The department of botany now occupies new quarters in Bessey Hall which has been completed and equipped recently. Class rooms, well equipped store rooms and laboratories for elementary botany and undergraduate and graduate work in morphology, histology, cytology, taxonomy, ecology and mycology afford ample opportunity for extensive training in these phases of botanical science. The equipment is adequate for a wide range of investigations in the various subdivisions of the subject. Greenhouses afford the necessary quarters for the culture of living plants to be used in the various courses as well as space for the use of research students.

The University Herbarium and the Herbarium of the Botanical Survey of Nebraska are again available after several years in storage because of the lack of room in the old building. The collections, now numbering 250,000 specimens are housed in new metal cases adjacent to the laboratory of systematic botany. The flora of nearly every civilized land is represented in these collections which contain a great amount of material available for careful taxonomic research. Many of the important exsiccati of the world are to be found here. Two of the important private collections which are now the property of the university are the Williams Collection of lichens consisting of 3,819 mounted specimens and the general herbarium of the late William Cleburne of Omaha numbering about 6,000 specimens.

The botanical library of some 15,000 books, pamphlets and separates is also conveniently housed in the building in new standard metal equipment. The most of the important American and European botanical periodicals are represented here by complete sets of bound volumes and in the current files.

The Botanical Seminar holds open meetings every two weeks for the reading of papers and discussion of botanical questions. To these meetings all students are welcome. Membership in the Seminar is restricted to advanced students of Botany who after invitation succeed in passing the entrance examinations set for them.

Before formal registration for a degree for graduate work in this department the student must have satisfactorily completed general botany (courses 1, 2), general morphology (courses 3 and 4), and plant physiology (course 20 and Plant Pathology and Physiology 105) or their equivalent (20 hours), and one year of zoology.

After consultation students may register for the following courses:

Master of Arts—For majors candidates may select work in cytology, histology, systematic botany, mycology and ecology, preferably in courses 37 to 46. For minors any courses excepting 1, 2, 3, 4, A, 20, 33, 34, and Plant Pathology and Physiology 105.

Doctor of Philosophy—Majors: Courses 37 to 46. Minors: Any courses which the student is prepared to enter (excepting 1, 2, 3, 4, A, 20, 33, 34 and Plant Pathology and Physiology 105).

Students in the Graduate School of Education who elect a major in botany must have had courses 1 and 2 (or their equivalent). They are recommended to take courses 3 and 4, and in addition courses 13 and 14, 33 and 34, 20, and Plant Pathology and Physiology 105.

A number of scholarships and fellowships in botany are available in the Graduate College for properly equipped students who wish to enter upon graduate work in botany. Information relative to these positions may be secured from the Dean of the Graduate College or from the head of this department.

COURSES

I. Histological Botany

5. **Histology**—A study of the origin and development of tissues and tissue aggregates in higher plants, with the technique of staining and mounting extended to apply to all of the major groups of plants. Should be preceded by courses 1 and 2. Two hours lecture. Four to eight hours laboratory. Two to three hours credit. First semester. E. R. Walker

6. **Cytology**—A study of the plant cell, mitosis and sporogenesis in higher plants with cytological technique with reference to the mechanism of inheritance. Must be preceded by 1, 2, or their equivalent. Two hours lecture. Four to eight hours laboratory. Two to three hours credit. Second semester. E. R. Walker

II. Systematic Botany

11. **Trees**—A review of the morphology and physiology of trees followed by work on the identification and classification of trees together with a study of the distribution of the more important forest trees of the United States. Emphasis is placed upon methods for identification. Two hours lecture or quiz. Four to six hours work in the laboratory, herbarium or field. Two to three hours credit. First semester. Pool

12. **Trees**—11 continued. Including a study of the structure of the more common economic woods leading to their identification; the relation of structure to strength, weight, shrinkage, grain, finish and other properties. These courses are designed to furnish teachers and others with a general knowledge of trees and woods which may be useful in practical daily life. Two hours lecture or quiz. Four to six hours work in the laboratory, herbarium or field. Prerequisite: Course 11. Two to three hours credit. Second semester. Pool

13. **Flowering Plants**—The principles of the classification of the flowering plants and their particular application to the orders of the Monocotyledons. Two hours lecture and quiz. Four to ten hours work in the laboratory, herbarium and field. Two to four hours credit. First semester. Pool, Hannah

14. **Flowering Plants**—The application of the principles of classification to the orders of Dicotyledons. This and the preceding course are intended to furnish a broad working knowledge of the flowering plants. Two hours lecture and quiz. Four to ten hours work in the laboratory, herbarium and field. Two to four hours credit. Second semester. Pool, Hannah

15. **Elementary Mycology**—The general morphology, physiology and classification of the fungi. Emphasis will be placed upon identification.

Two hours lecture. Four to six hours laboratory and field work. Two to three hours credit. First semester. L. B. Walker

16. See Plant Pathology and Physiology 108.

17. **Advanced Mycology**—Study of a selected group of fungi including morphology, development and classification. Two lectures or conferences. Four to thirteen hours laboratory. Two to five hours credit. First semester. L. B. Walker

18. **Advanced Mycology**—17 continued. Second semester.

III. Physiological Botany

19. See Plant Pathology and Physiology 105.

20. **Elementary Ecology**—The study and measurement in the field and laboratory of the factors which make the plant's home together with a study of plant structures and activities in response to the environment. The composition and development of vegetation. Three hours attendance. Six hours field and laboratory work. Three hours credit. First semester. Weaver

21. **Plant Ecology**—An extended study and measurement of the factors to which plants are subjected in their natural habitats. The course also includes a field and laboratory study of the anatomy of leaves, stems and roots and the reproduction and dissemination of plants as related to external conditions. Two hours attendance. Four to six hours field and laboratory work. Two to three hours credit. First semester. Pool, Weaver

22. **Plant Ecology**—A continuation of course 21 but including methods for the study of the origin, development, structure and succession of vegetation types or plant associations. Detailed investigations will be made in the prairies, salt-basins and woodlands about Lincoln. An introduction to methods of ecological investigations. Two hours attendance. Four to six hours field and laboratory work. Two to three hours credit. Second semester. Pool, Weaver

27. **The Plant Geography of North America**—Lectures, herbarium work and assigned readings upon the natural plant life regions of North America. A general introduction to phytogeographic methods with particular reference to our own continent. Prerequisite: Courses 13, 14, 19, 20. Two hours attendance. Four hours preparation. Two hours credit. First semester. Pool

28. **The Natural Plant Life of Nebraska**—A special study of the natural vegetation of Nebraska by means of lectures, herbarium work and readings. The sources of the flora of Nebraska and the development and structure of the vegetation of the Prairies and Great Plains will also be studied. Two hours attendance. Four hours preparation. Two hours credit. Second semester. Pool

IV. Technical Botany

29. **History of Botany**—A brief survey of the development and differentiation of botany from about 400 B. C. to the present day. For advanced and graduate students. Two hours attendance. Four hours reading and other preparation. Two hours credit. First semester.
Pool, Weaver

31. **Botanical Literature**—A study of the sources of botanical information, books, periodicals and other valuable sources. Library work with frequent conferences and quizzes. For advanced and graduate students. Four hours library work. Two hours credit. First semester. Pool

33. **Botany for Teachers**—A course intended to acquaint students with the materials and methods of teaching botany in the high schools and colleges. Suggestions as to the composition and arrangement of courses; what to do in the laboratory and field; how to collect material and how to prepare material for future use; the herbarium and other illustrative material; books, guides and other useful literature; sources of materials and supplies for the laboratory. Prerequisite: Courses 1, 2 or 3, 4. Two hours attendance. Four hours preparation. Two hours credit. First semester. Weaver

34. **Botany for Teachers**—33 continued. Second semester.

The student may register for any one of these courses year after year until the completion of his problem.

37. **Mycological Research**—Assigned problems in field and laboratory. Five to ten hours credit. First semester. Pool, L. B. Walker

38. **Mycological Research**—37 continued. Second semester.

41. **Taxonomic Research**—Assigned problems in the field and herbarium. Five to ten hours credit. First semester. Pool

42. **Taxonomic Research**—41 continued. Second semester.

43. **Morphological Research**—Assigned problems in the morphology of a plant, or group of plants. Five to ten hours credit. First semester.
Pool, E. R. Walker

44. **Morphological Research**—43 continued. Second semester.

45. **Ecological Research**—Assigned problems in field and laboratory. Five to ten hours credit. First semester. Pool

46. **Ecological Research**—45 continued. Second semester.

CHEMISTRY

Professor Dales (*Head of Department*), Associate Professor Borrowman, Assistant Professor Fossler, Assistant Professor Frankforter, Assistant Professor Lewis, Mrs. Gish

Graduate work in chemistry is based upon the assumption that the student has had courses A, B, 1, 2, 3, 25, and 26 or their equivalents.

Courses 5, 7, and 8 are regarded as fundamentals and must be taken before a student may pursue chemistry as a major subject.

Students may pursue any special line of work in which they may have become interested as a result of advanced work in this or other universities. The opportunities for young men in technical work, especially assaying, railway chemical work, experiment station and government work, and with various manufacturing concerns are continually on the increase. Many of the station and government positions are open to young women. The demand for good science teachers is always greater than the supply.

Several graduate assistantships (paying $400 a year and fees) and at least one fellowship and one scholarship are given to promising applicants each year. They may be renewed for a second year. The holder is required to give about half of his time to instruction in the general courses. Application should be made to the head of the department not later than April first.

Courses for advanced degrees usually lie in experimental chemistry and chemical theory, much latitude being allowed in respect to the exact topics. The attainment of a degree depends more upon the candidate's ability to think clearly and closely than upon the accomplishment of a fixed amount of work.

Master of Arts—Minors: Four to six hours selected from courses 7, 8, 15, 16, 21, 22, 25, 26, 27, 39, 40 and 44 with consent of the head of the department. Major: Advanced work along one of the lines indicated by courses above named and a thesis.

Doctor of Philosophy—Minors: Not less than six hours class work selected by the candidate upon consultation with the head of the department. Major: Graduate study and the preparation of a thesis which shall mark an advance in knowledge along the line of the subject chosen. The exact time requirement cannot be given, but shall be at least the minimum required by the University for the degree. The candidate for the doctorate from this department must choose two minors at least one of which shall be from allied subjects.

COURSES

5. **Qualitative Analysis**—Study of characteristic reactions for the rarer elements and their application to analytical purposes; elementary spectroscopic analysis; dry way reactions. Prerequisite: Courses 1 and 2. Two hours lecture. Four hours laboratory. Two hours credit. First and second semesters. Dales

7. **Quantitative Analysis**—Gravimetric determinations of the more important bases and acids, including complete analysis of one limestone and one alloy. Prerequisite: Courses 1 and 2. One hour attendance. Five to fourteen hours laboratory. Two to five hours credit. First and second semesters. Frankforter

8. **Quantitative Analysis**—7 continued. Volumetric analysis, electrolytic analysis and sanitary analysis of water. One hour attendance.

Five to fourteen hours laboratory. Two to five hours credit. First and second semesters. Frankforter

39. **Advanced Analytical Chemistry**—A more extended study of chemical analysis than that offered in courses 7 and 8. Laboratory practice leading to analytical research. Six to fifteen hours laboratory. Two to five hours credit. First semester. Dales

40. **Advanced Analytical Chemistry**—39 continued. Second semester.

15. **Organic Analysis**—Prerequisite: Courses 1, 2, and 3. Three hours attendance. Four hours laboratory. Three hours credit. First semester. Fossler

16. **Organic Analysis**—15 continued. Second semester.

34. **Physiological Chemistry**—Comparative study of plant and animal chemistry. Designed for those interested in biology. Prerequisite: Courses 1, 2, 3. Three hours lecture. One hour quiz. Seven hours laboratory. Four hours credit. Second semester. Fossler

43. **Nitrogen Chemistry**—An elective course of one hour lecture a week on the evolution of compounds of nitrogen, their properties, and products of dissociation. Prerequisite: General inorganic and organic chemistry. One hour credit. First semester. Fossler

27. **Physical Chemistry**—Laboratory course. Methods of most general application to chemistry. May be taken with or after course 25. Six hours laboratory. Two hours credit. Second semester. Dales

CIVIL ENGINEERING

Professor Stout (*Head of Department*), Professor Chatburn, Associate Professor Bridgman, Associate Professor Grant, Assistant Professor Riddervold, Mr. Sjogren

COURSES

2. **Surveying**—Abbreviated course for students in Mechanical Engineering. Prerequisite: Trigonometry. Two hours attendance with occasional substitution of three-hour field periods. Four hours preparation. Two hours credit. Second semester. Bridgman

5. **Surveying**—To be accompanied by course 5a. Prerequisite: Trigonometry. Two hours attendance. Four hours preparation. Two hours credit. First and second semesters. Bridgman

5a. **Surveying Field Work**—To accompany course 5. Six hours field. Two hours credit. First and second semesters. Bridgman

6. **Surveying**—5 continued. Second semester.

6a. **Surveying Field Work**—5a continued. Second semester.

7. **Railway Surveying**—Field and office methods employed in surveys for locating and constructing railroads. Prerequisite: Courses 5 and 5a. One hour attendance. Six hours field. Two hours preparation. Three hours credit. First semester. Bridgman

8. **Railway Construction**—Principles and practice. Roadbed, tunnels, minor structures. Contractors' organization and equipment. Cost data and analysis; estimates. Prerequisite: Course 8 or equivalent experience in actual work. Two hours attendance. Four hours preparation. Two hours credit. Second semester. Bridgman

10. **Economic Theory of Railway Location**—Scientific balancing of cost, receipts, and operating expenses. Open to fourth-year students. Three hours attendance. Six hours preparation. Three hours credit. Second semester. Bridgman

11. **Hydraulics**—Prerequisite: Calculus and Applied Mechanics 14. Two hours attendance. Four hours preparation. Two hours credit. Both semesters. Stout

12. **Irrigation Engineering**—Grade, cross-section and capacity of canals; surveys; designs of structures; source of water supply; analysis of hydrographic data; return and seepage waters; irrigation by pumping; organization; legal and economic principles. Prerequisite: Course 11. Three hours attendance. Six hours preparation. Three hours credit. Second semester. Stout, Sjogren

13. **Water Supply of Cities**—Prerequisite: Course 11. Three hours attendance. Six hours preparation. Three hours credit. First semester. Grant

14. **Cleaning and Sewerage of Cities**—Prerequisite: Course 11. Three hours attendance. Six hours preparation. Three hours credit. Second semester. Grant

15. **Design of Framed Structures**—Prerequisite: Course 16. Three hours attendance. Six hours preparation. Three hours credit. First semester. Riddervold

16. **Stress in Framed Structures**—Prerequisite: Applied Mechanics 15 or 16. Four hours attendance. Eight hours preparation. Four hours credit. Second semester. Riddervold

17. **Design in Reinforced Concrete**—Prerequisite: Applied Mechanics 15. Two hours attendance. Four hours preparation or drawing. Two hours credit. First semester. Riddervold

18. **Structural Design**—Adapted to the needs of students in Agricultural, Mechanical and Electrical Engineering. Prerequisite: Applied Mechanics 16. Two hours attendance. Four hours preparation. Two hours credit. Second semester. Riddervold

20. **Advanced Theory of Structures**—Arches, cantilevers, continuous girders, statically indeterminate stresses. Prerequisite: Course 15. Three

hours attendance. Six hours preparation. Three hours credit. Second semester. Riddervold

21. **Roads, Streets and Pavements**—Lectures, assigned readings, and reports. Two hours attendance. Four hours preparation. Two hours credit. First semester. Chatburn

22. **Masonry Construction**—Prerequisite: Applied Mechanics 14. Four hours attendance. Eight hours preparation. Four hours credit. Second semester. Riddervold

24. **Hydraulic Engineering**—Hydraulic development for purposes of drainage, power, and transportation. Flood protection. Collection and analysis of hydrographic data and the principles involved in the design of reservoirs, canals, levees, and structures. Prerequisite: Course 11. Three hours attendance. Six hours preparation. Three hours credit. Second semester. Stout

25. **Engineering Economics**—Conducted on the seminar plan. Two hours attendance. Four hours preparation. Two hours credit. First semester. Stout, Bridgman, Grant

26. **Engineering Economics**—25 continued. Second semester.

400. **Thesis**—Open to approved seniors. Three to five hours credit.

DAIRY HUSBANDRY

Professor Frandsen (*Head of Department*), Professor Woodward, Assistant Professor Maxwell, Assistant Professor Thorson, Mr. North, Mr. Colman

COURSES

51. **Dairy Seminar**—Elective for students specializing in dairying. This course consists of a study of the work accomplished by the various experiment stations, also a review of the best foreign dairy literature. One hour attendance. Two hours preparation. One hour credit. First semester. Frandsen

52. **Dairy Seminar**—51 continued. Second semester.

53. **Thesis**—Original work and investigation on some phase of the dairy industry. Frequent conferences with instructors. Prerequisite: Senior standing. Two to four hours preparation. One or two hours credit. First or second semester. Frandsen, Woodward

101. **Research Methods**—A critical study of the methods employed in conducting dairy experimental work at this and other stations. One hour attendance. One hour credit. First semester. Frandsen, Woodward

102. **Research Methods**—101 continued. Second semester.

103. **Research in Milk Production**—A large herd of cattle of the leading dairy breeds is available for use in studying problems of feeding, breeding, milk production, growth, and care and management of the dairy animal. This herd produces sanitary milk for the city trade and special

opportunities are offered for a critical study of sanitary and certified milk production. Students especially interested are allowed to assist with the investigations now under way at the Experiment Station and in certain instances may undertake special problems independently. Thesis required. First semester. Frandsen, Woodward

104. **Research in Milk Production**—103 continued. Second semester.

105. **Research in Dairy Manufactures**—Opportunity and facilities are given by special arrangement to study and investigate special problems in butter making, ice cream making, cheese making and other work directly pertaining to dairy manufactures. First semester. Frandsen

106. **Research in Dairy Manufactures**—105 continued. Second semester.

ECONOMICS AND COMMERCE

Professor LeRossignol (*Head of Department*), Professor Virtue, Associate Professor Stephens, Associate Professor Martin, Assistant Professor England, Mr. Bullock, Mr. Cole

Candidates for the degree of Master of Arts are required to complete at least one year's work and to present a satisfactory thesis, showing ability to carry on independent investigation and to assemble the results. A candidate may give all of his time to economic studies, or he may offer a major (24 hours) in one department and a minor (10 hours) in another.

Candidates for the degree of Doctor of Philosophy are required to complete at least the equivalent of three years' work after taking the Bachelor's degree, or two years' work after the Master's degree, but the degree will not be granted unless the candidate attains a satisfactory standard of scholarship, irrespective of time of residence or study. In addition to his major course, which should represent about three-fifths of the total work, the candidate may offer either one minor or two. Candidates taking a major in Economics are usually advised to take minors in History, Political Science, Philosophy or other subjects more or less closely related to the major. In every case a thesis is required, embodying the results of original investigation.

The University offers excellent opportunities for graduate study and research. Several important libraries are accessible to students, and there is no lack of promising fields of investigation, particularly along lines of public and private finance, economic history of Nebraska and the West in general, agricultural conditions, commercial relations, and problems of capital and labor. The Department offers a number of special courses, and these may be supplemented by allied courses in other departments.

COURSES

15. **Advanced Economics**—A review of the fundamental principles of economics devoted chiefly to theories of value and distribution. History

of economic thought; medieval economics; Mercantilists, Cameralists and Physiocrats; the English classical economists; the Historical School; the Austrian School; relation of economic theory to industrial conditions; importance of economic theory in relation to social reform. Students registering in this course are expected to continue in course 16. Two hours attendance. Two hours credit. First semester. LeRossignol

16. **Advanced Economics**—A continuation of course 15. Two hours attendance. Two hours credit. Second semester.

[19. **Economic Crises**—A comparative study of economic, industrial and financial crises from the seventeenth century to the present day. Especial attention is given to the recent world crises. The work covers the local and minor crisis preliminary to the main crisis and the transmission of the crisis from country to country; the fluctuation in investment, bank items, and prices in the principal countries; the action and reaction between industrial activity and financial business. Supplementary readings on the theory of crises. Two hours attendance. Two hours credit. First semester. *Not given in 1917-1918.* England]

25. **Corporation Finance and Investments**—This course includes a study of corporate organization, capitalization, income, expansion, re. adjustment and contraction. Special emphasis is given to the discussion of the merits and elements of the stocks and bonds of industrial, public service and railway corporations as investments, and the stock market methods underlying their purchase and sale. Two hours attendance. Two hours credit. First semester. Stephens

26. **Trust Problems**—The rise and development of trust forms of business organization; the conditions essential to the operation and growth of trusts; the elements of large-scale production and monopoly entering into the formation of trusts; dangers arising from their unrestricted operation; remedies, including governmental interference; Federal and state anti-trust laws and decisions. Two hours attendance. Two hours credit. Second semester. Stephens

35. **Labor Problems**—History of the labor movement in Europe and America; wages in the 19th century; theory of wages; methods of remuneration; the minimum wage; hours and conditions of labor; migration; organization and conflicts of capital and labor; conciliation and arbitration; employers' liability; insurance and pensions; workingmen in politics; relation of Socialism to the labor movement. Three hours attendance. Three hours credit. First semester. LeRossignol

36. **Methods of Industrial Peace**—A special study of the labor problem as a conflict between employers and laborers, harmony and divergence of interests; organization of employers and laborers; their aims and methods; interests of the general public; gains and losses thru strikes; trade agreements; conciliation; voluntary and compulsory arbitration; co-operation; profit sharing; political activities of workingmen and benefits obtained thru legislation; experience of New Zealand, Australia and

Canada; progress of the working class in the United States and other countries. Three hours attendance. Three hours credit. Second semester. LeRossignol

[37. **Socialism**—History of socialistic thought before the French Revolution; Utopias of Plato, More, Campanella; relation of the French Revolution to modern Socialism; Utopian theories of Owen, Saint-Simon, Fourier; communistic experiments in Europe and America; Proudhon, Blanc, and other French socialists; Marx, Engels, Lassalle and other German socialists; growth of Socialism thruout the world; Socialism in the United States; Syndicalism; recent socialistic theory and criticism. Three hours attendance. Three hours credit. First semester. *Not given in 1917-1918.* LeRossignol]

45. **Economic Seminar**—Open to a limited number of graduates and other advanced students. Each student will make an intensive study of a given subject, under the direction of a member of the Faculty, and will report the results of his investigation before the class. Members of the Faculty also will give lectures and take part in the discussions. One to two hours attendance. One to three hours credit. First semester.
LeRossignol, Virtue, Stephens, Martin, England

46. **Economic Seminar**—A continuation of course 45. Students registering for course 45 will be expected to continue in course 46, and will receive credit according to the work which they do. One to three hours credit. Second semester.

EDUCATIONAL COURSES

I. EDUCATION

Professor Luckey (*Head of Department*), Miss Munson

The chief aim of the department of education in its graduate work, (see under Graduate School of Education), is to furnish opportunity to school officers, principals, superintendents, teachers of education, college and normal school instructors and public spirited citizens, for advanced study and investigation of important problems in education. A secondary aim is to advance the profession of teaching, by aiding students in discovering themselves, and by encouraging them in productive activity.

For the graduate teachers' diploma, (see Graduate School of Education), there is a requirement of twelve semestral hours in education. To meet this requirement courses 5-6, 8-14, 36 may be elected, or the student may elect four hours from graduate courses in applied education. For the above diploma courses 1, 2, 7 in Education are prerequisite.

Candidates for advanced degrees in education must have completed the professional requirements leading to the University Teachers' Certificate or undergraduate college credit in education equivalent to at least twelve semestral hours. Proficiency in one or more academic subjects taught in the high school is also required.

Master of Arts Requirement—Second Minor: Four hours class-room work for one year. First Minor: Six hours class-room work for one year, with assigned readings equivalent to a two-hour course. Major: At least six hours class-room work for one year, assigned readings and a thesis representing the equivalent of a six-hour course for one year.

The major for the master's degree may be accepted as a minor for the doctorate. The department is not at present sufficiently equipped to encourage candidates for the doctor's degree in Education; however, facilities for a limited number of strong candidates can be provided. A major for the doctor's degree in Education requires three years of graduate work of not less than twelve semestral hours per year and a thesis equivalent to half as many more hours. The number of hours required for major and minor, as given above, is only approximate, and cannot be relied upon unless the quality of the work is of high order.

The department has a scholarship and a fellowship open to graduate students of special merit. The scholarship is open only to students of full graduate rank while the fellowship is open to Masters or students of one year graduate standing in Education.

COURSES

5. **Systems of Education**—Their origin and development, including a comparative study of the leading systems of education in Europe and America. The educational systems of Germany, France, England and the United States are separately studied and compared. Open to seniors and graduates. Two hours attendance. Two hours credit. First semester. Luckey

6. **School Hygiene**—A seminary course devoted to the study of school environments and curricula in reference to their effect upon the health, growth and development of school children, including the location and sanitation of school buildings—light, heat, ventilation, furniture, medical inspection, school diseases, baths, lunches; sleep, food, clothing, exercise, study, fatigue, recreation, health of teacher and pupils. Open to seniors and graduates. Two hours attendance. Two hours credit. Second semester. Luckey

9. **Adolescence**—The health, growth, mental and moral development of youth as related to the various problems of secondary education such as attendance, interest, habits of study, discipline, school spirit, ideals, play, work, character. An advanced course in child study especially adapted to secondary teachers, principals and superintendents. Prerequisite: Courses 1, 2 and 7. Intended primarily for graduates. Two hours attendance. Two hours credit. First semester. Luckey

10. **Adolescence**—9 continued. Second semester.

11. **Philosophy of Education**—A study of the principles underlying all education, and their influence in determining the material, the curricu-

lum, and the method of instruction. Open to graduate students or seniors specializing in education. Two hours attendance. Two hours credit. First semester. Luckey

12. **Philosophy of Education**—11 continued. Second semester.

13. **Graduate Seminary**—A study of current educational literature as found in the best periodicals, and a study of one or more educational problems of special interest to the teachers of Nebraska. Students will be directed in the preparation of theses and productive studies leading to higher degrees in education. Open to graduates who are working for higher degrees in education. One or two hours credit. First semester. Luckey

14. **Graduate Seminary**—13 continued. Second semester.

16. **Educational Psychology**—A practical study of the factors which influence the development of body and mind. Open to teachers and also to students in the last two years of their course who have had a semester of psychology. Two hours attendance. Two hours credit. Second semester. Wolfe

II. EDUCATIONAL THEORY AND PRACTICE

Professor Fordyce (*Head of Department*), Miss Allen, Mr. Marrs

COURSES

55. **Educational Measurements**—A consideration of the standards and scales for the measurement of educational processes together with the technique of applying these standards to educational products in determining efficiency in school achievements and in conducting school surveys. Two hours attendance. Two hours credit. First semester. Fordyce

56. **Supervision of Instruction**—This course offers to graduate students and to experienced teachers an opportunity to study the underlying principles of criticism and the general functions of supervising officers. Practical work in supervision is provided in the Teachers College High School. Two hours attendance. Two hours credit. Second semester. Fordyce

III. SECONDARY EDUCATION

Professor Reed (*Head of Department*)

COURSES

35. **The Secondary School**—A general course on the problems of the secondary school. Lectures, discussions, readings and reports. Open to juniors, seniors and graduates. One to two hours attendance. One or two hours credit. First and second semesters. Reed

36. **The Secondary School**—An advanced course on the organization and problems of the secondary school. Open to graduates. Two hours attendance. Two hours credit. First semester. Reed

IV. SCHOOL ADMINISTRATION

Professor Taylor (*Head of Department*)

COURSES

37. **Educational Organization and Administration**—This course is planned especially for superintendents and principals. It deals with the problems of organization and administration of public schools as viewed in the light of the prevailing systems in America. Among the topics considered are national and state control of education; the county, township, city and rural system; school building; playground; the school as a social center; inter-relation of school boards; superintendents, principals, and teachers; supervision of instruction—the teaching staff, improvement of teacher in service; administration of secondary and elementary schools; education for defective and subnormal children; discipline, government, courses of study, grading of promotion. Open to teachers in training. Number of hours credit depends upon work done. First semester.
Taylor

38. **Educational Organization and Administration**—37 continued. Second semester.

ELECTRICAL ENGINEERING

Professor Ferguson (*Head of Department*), Associate Professor Hollister, Mr. Holtz

COURSES

15. **Technical Reports**—Preparation and presentation of reports upon technical subjects. Prerequisite: Courses 1, 2 and 8 and registration in 5. One hour attendance. Two hours preparation. One hour credit. First semester. Hollister

16. **Technical Reports**—Continuation of course 15. Elective. One hour attendance. Two hours preparation. One hour credit. Second semester. Hollister

17. **Electric Lighting and Illumination**—Wiring codes, lighting apparatus and circuits, illumination and illuminating engineering. Prerequisite: For Electrical Engineers—course 1 and Phys. 4; for Architectural Engineers—Phys. 4 and E. E. 3. Two hours attendance. Four hours preparation. Two hours credit. First semester. Holtz

18. **Electro-Chemical Engineering**—Elements of electro-chemistry, with special emphasis placed upon some of the commercially most important processes as metal winning, furnaces, storage batteries, etc. Prerequisite: Courses 1 and 8. Two hours attendance. Four hours preparation. Two hours credit. Second semester. Ferguson

19. **Telephone Engineering**—Line construction, instruments, switchboards, systems, operation, etc. Prerequisite: Courses 1 and 8 and regis-

tration in 5. Two hours attendance. Four hours preparation. Two hours credit. First semester.
Hollister

20. **Electric Railways**—Preliminary estimates and economics, construction, equipment and operation. Prerequisite: Courses 1 and 8. Three hours attendance. Six hours preparation. Three hours credit. Second semester.
Ferguson

21. **Electric Power Systems**—Generation, transmission, distribution and utilization of power. Prerequisite: Courses 2 and 8 and registration in course 5. Three hours attendance. Six hours preparation. Three hours credit. First semester.
Holtz

22. **Electrical Design**—Alternate-current apparatus, transformers, synchronous generators. Prerequisite: Courses 5 and 9. Three hours lecture. Six hours calculation and drafting. Three hours credit. Second semester.
Ferguson

31. **Engineering Problems**—Engineering problems demanding a knowledge of algebra, trigonometry, calculus, vectors, mechanics, electrical phenomena, alternating-current circuits, etc. Prerequisite: Math. 4, Phys. 5 and registration in E. E. 5 and 9. Two hours attendance. Four hours preparation. Two hours credit. First semester. Ferguson

202. **Elements of Electrical Engineering**—Lecture course designed as a general introduction to the subject. It is intended to give both breadth and perspective. Required of Electrical Engineering sophomores. One hour attendance. Two hours preparation. One hour credit. Second semester.
Ferguson

400. **Thesis**—Open to approved seniors. Three to five hours credit.

51. **Alternating-Currents**—Transients, electric waves, etc. First or second semester. Three hours credit.
Ferguson

61. **Electrical Design**—Advanced electrical apparatus design. Three hours credit. First or second semester.
Ferguson

91. **Electrical Laboratory**—Advanced investigations. Hours and credit to be arranged. First semester.
Ferguson, Hollister

92. **Electrical Laboratory**—Continuation of course 91. Hours and credit to be arranged. Second semester.
Ferguson, Hollister

ENGLISH HISTORY

Professor Jones (*Head of Department*)

English history occupies a position intermediate between general European history and American history, leading from the one and into the other. It affords perhaps the best introduction to the general history of

the modern world, which is touched at more points by the growth of the British Empire and the extension of the English language and institution, than by any other historical subject. Students of English literature, of law, economics and sociology will find this field of special importance.

The Degree of Master of Arts—The requirements for the degree of master of arts with English history as a major are: (1) An accurate and comprehensive knowledge of the outlines of English history, and a more detailed knowledge of some period; an acquaintance with the literature of the special period; a general acquaintance with modern European history; and (2) a thesis based upon an exhaustive study of the source and secondary material in some narrow field of English history.

The thesis will be written in seminar 11 or 12, but the candidate is expected to show greater independence and initiative than the other members of the seminar, and to devote to the subject a large amount of time which cannot be determined in advance. For this reason, it is not always possible for even a well prepared student to meet all the requirements in one year; but it should be possible to satisfy the requirement of residence.

For those desiring a minor in English history, courses will be arranged in consultation with the candidate's major adviser.

COURSES

11. **Seminar**—The Anglo-Portuguese Treaty of 1654, based upon a nearly complete transcript of the manuscript material in English and Portuguese archives, supplemented by all the existing printed material. Open to graduate and advanced students upon consent of the instructor. Two hours attendance. Two hours credit. First semester. Jones

12. **Seminar**—The Anglo-Portuguese Treaty of 1661, based upon material as in course 11. Open to graduate and advanced students upon consent of the instructor. Two hours attendance. Two hours credit. Second semester. Jones

ENGLISH LANGUAGE AND LITERATURE

Professor Sherman (*Head of Department*), Professor Stuff, Professor Wallace, Professor Pound, Associate Professor Scott

Students intending candidacy for the degree of Master of Arts must have completed the two years of preparation represented by courses 1, 2, 5, 6, 11, 12. Work will be arranged for each from courses beginning with course 15 below, but major programs must include courses 17, 18 and in general 35, 36.

Candidates for the master's degree, with the Graduate Teachers' Diploma, will complete in addition to the foregoing, for a combined major, courses

31, 32, with courses 3, 4, 7, 8 in Rhetoric, and four hours of especially assigned work in Rhetoric or English Literature. Good facilities for advanced study in research with reference to the Degree of Doctor of Philosophy are available in the publications of the Early English, Scottish, Percy, Ballad, Shakespeare Societies, with *Celtic*, and the other usual series.

COURSES

15. **Current Comparative Literature**—Literary art of today. Comparative view of means, modes, and influences. Study of chief authors in Scandinavian, German, Russian, French, Italian, as well as English and American writers. Prerequisite: Courses 1 and 2. Class limited to twenty. Admission by arrangement with instructor. Acquaintance with French and German or Italian is desirable, but not essential. Two hours attendance. Three hours credit. First semester. Wallace

15a. **Library Course in 16th Century Dramatic and Other Literature**—Lectures, reports, and criticisms. Two hours attendance. Three hours credit. First semester. Wallace

16. **Current Comparative Literature**—15 continued. Two hours attendance. Three hours credit. Second semester.

16a. **Library Course in 18th Century Authors**—Lectures, reports, and criticisms. Two hours attendance. Three hours credit. Second semester. Wallace

17. **Essentials of Old English: Outline of Old English Grammar**—Reading at earliest moment of prose and poetic specimens. *Beowulf*, thru 500 lines. Introductory to the history of the English language and the history of Old English literature. Four hours attendance. Four hours credit. First semester. Pound

18. **Old and Middle English and History of the English Language**—17 continued. *Beowulf* continued. The development of the language traced from Old to Modern English, the history of inflections, sound changes, spelling, etc. Outline of Middle English grammar. Reading of selected Middle English texts before Chaucer. Four hours credit. Second semester. Pound

19. **The Novel**—Its relation to the expression of life. Study of modes and art principles in the interpretation of life. Prerequisite: Courses 1 and 2. Two hours attendance. Two hours credit. First semester. Stuff

20. **The Novel**—19 continued. Two hours attendance. Two hours credit. Second semester.

23. **Browning**—Written studies of *Luria, Return of the Druses, Pippa Passes*. Two hours attendance. Two hours credit. First semester.
Wallace

24. **Browning**—23 continued. *The Ring and the Book, Fifine at the Fair*. Second semester.

25. **Shakespeare**—Advanced studies in dramatic art, as represented in *Cymbeline, The Winter's Tale, Coriolanus*. Two hours attendance. Two hours credit. First semester. Sherman

26. **Shakespeare**—25 continued. *Romeo and Juliet, Twelfth Night, King Lear*. Second semester.

27. **English Ballads**—Introduction to the study of popular poetry. Reading of selected ballads of England and Scotland, with some references to ballads in other literatures. The ballad revival in the eighteenth century. Modern imitative ballads. One hour attendance. One hour credit. First semester. Pound

28. **English Lyric Poetry**—Nature of the lyric. Survey of leading lyric kinds and types; ballads, sonnets, odes, elegies, etc. History of the English lyric. Two hours attendance. Two hours credit. First semester.
Pound

29. **Methods of Instruction in Secondary English**—A practical study of the synthetic, interpretative and technical phases of presenting this subject in secondary grades. Special attention given to outlining of courses, development of material, selection of books for school libraries and home readings. Experience in the preparation and presentation of topics will be gained in connection with the Teachers College High School Practice Course in Teaching English. Lectures, written reports, observation reports, criticism, library readings. Prerequisite: English Literature courses 1, 2, 11, 12; Rhetoric 3, 4. Two hours attendance. Two hours credit. First semester. Sherman, Stuff

29a. **Methods of Instruction in Elementary English**—Open to all preparing to teach English in the elementary grades. Prerequisite: English Literature 1, Rhetoric 1. Two hours attendance. Two hours credit. First semester. Stuff, Clark

30. **Methods of Instruction in Secondary English**—29 continued. Prerequisite: English Literature 1, 2, 11, 12, 17, 29. Two hours attendance. Two hours credit. Second semester. Stuff

31. **Teachers' Practice Course**—Daily practice in teaching. Study of problems arising from actual conditions in the classroom. One teachers' conference each week. Prerequisite: English Literature 1, 2, 11, 12, 29, 30. Two hours credit. May be registered for twice. First and second semesters. Stuff

32. **Seminary**—Advanced study of problems in teaching English in advanced, secondary and elementary grades. The field affords opportunity

for individual research. The course includes investigation of existing conditions. Two hours attendance. Two hours credit. First semester. Stuff

32a. **Seminary**—Course 32 continued. Two hours attendance. Two hours credit. Second semester. Stuff

33. **Principles of Dramatization**—Construction in the drama of Shakespeare, Moliere, Schiller, Goethe, and Victor Hugo. Two hours attendance. Two hours credit. First semester. Sherman

34. **Principles of Dramatization**—33 continued. Construction in the drama of Corneille, Calderon, Goldoni, Maeterlinck, Ibsen, and in the classic drama. Second semester. Sherman

35. **Advanced Old English**—Open to students who have a working knowledge of the language. The special mode of study varies according to the needs or equipment of the class. Serves often as an introduction to comparative Teutonic philology. Outline of general phonetics included if necessary. Preceding or accompanying study of Gothic and Old High German recommended. Two hours attendance. Two hours credit. First semester. Pound

36. **Advanced Old English**—35 continued. Second semester.

37. **History of Old English Literature**—Reading of texts in translation. Study of textual and manuscript criticism, disputed readings, dates, problems of authorship and interpolation, historical and mythological elements, history of opinion, etc. One hour attendance. One hour credit. First semester. Pound

38. **History of Old English Literature**—37 continued. Second semester.

39. **Play Construction**—Intended for specially qualified students who wish to work along the lines of practical play writing. An intensive study of the fundamental principles of the acting drama and an application of these principles in original construction and criticism. Primarily, a writing and practice course, including the guidance of the student not only thru the making of a producible play but its actual stage presentation. Admission by consent of the instructor. Two hours attendance. Two hours credit. First semester. Scott

40. **Play Construction**—39 continued. Two hours attendance. Two hours credit.

41. **Seminary in English Literary Prose**—Study of development and features. Two hours attendance. Two hours credit. First semester. Sherman

42. **Chaucer**—Literary and linguistic studies. Informal lectures on contemporary fourteenth century life and literature. Two hours attendance. Two hours credit. Second semester. Pound

43. **Seminary in Criticism**—Two hours attendance. Two hours credit. First semester. Sherman

44. **Seminary in Present Literary Forms and Tendencies**—Two hours attendance. Two hours credit. Second semester. Sherman

45. **Celtic Sentiment and Thought in Its Relation to English Literature**—A survey of early Irish and Welsh literature with special study of the Arthurian sources. Admission on consent of the instructor. Two hours attendance. Two hours credit. First semester. Stuff

46. **Celtic Sentiment and Thought in Its Relation to English Literature**—45 continued. Celtic influence upon the English romantic movement. Two hours attendance. Two hours credit. Second semester. Stuff

47. **Contemporary Drama**—Studies in the construction and criticism of the modern play. Admission on approval of instructor. Two to three hours credit. First semester. Scott

48. **Contemporary Drama**—47 continued. Second semester.

49. **Seminary in Poetic Form**—Two hours attendance. Two hours credit. First semester. Sherman

51. **Shakespeare Seminary**—Two hours attendance. Two hours credit. First semester Wallace

52. **Seminary Course**—51 continued. Two hours attendance. Two hours credit. Second semester. Wallace

ENTOMOLOGY

Professor Bruner (*Head of Department*), Professor Swenk, Assistant Professor Dawson

The department maintains a laboratory fully equipped for the use of students engaged in research work along systematic lines, and a modern insectary well provided with apparatus useful in facilitating research in economic entomology, such as breeding cages, cameras, dark room and aquaria, for those investigating the life-histories of insects. The research laboratory is supplied with compound and dissecting microscopes, microscopical accessories, camera lucida, lanterns and slides and illustrative models and charts. A collection of insects numbering approximately 250,000 pinned specimens is available for study by advanced students; it is particularly rich in Hymenoptera, Diptera and Orthoptera and contains many specimens of these orders named by specialists, including a considerable number of their types. While the greater portion of the collection is representative of our state and national fauna, it is also exceedingly rich in exotic material from Argentina, Costa Rica, Mexico and the Philippine Islands collected by Professor Bruner on entomological excursions to these countries. The library contains practically complete files of all the American and the principal foreign entomological periodicals as well as most of the special monographs in the various orders, and is readily accessible to advanced students, while the excellent economic libraries of the State Entomologist and Nebraska Experiment Station are close at hand and available for reference. The results of studies carried on in the department are issued consecutively in a numbered series.

Courses 1 and 2 or 3 and 4 are open to all students, and they, or their equivalent, must precede all other college courses in entomology except 7, 7a, 8, 9, 10 and 11.

COURSES

(These courses may be registered for repeatedly until the completion of the problem.)

14. **Seminary**—The seminary work of the department is carried on by the Nebraska Entomological Society, an association of students specializing in entomology and taking advanced or graduate courses, meeting at intervals for the presentation of papers and the discussion of current entomological literature.

15. **Research in Systematic Entomology**—Independent studies under the advice of the head of the department leading to the monographing of some genus, subfamily or family of insects or the detailed study of the insect fauna of Nebraska in one of the larger groups. First semester. Bruner

16. **Research in Systematic Entomology**—15 continued. Second semester.

17. **Research in Economic Entomology**—Individual investigation of some special problem in economic entomology, usually the monographing of a species or group of species of economic importance. First semester. Bruner

18. **Research in Economic Entomology**—17 continued. Second semester.

EUROPEAN HISTORY

Professor Fling (*Head of Department*), Associate Professor Pfeiffer, Assistant Professor Needham

The department offers excellent opportunities for graduate study on the French revolution and the Napoleonic era. The collection of sources and secondary works upon the early revolution is the best in the west and one of the best in the country. On the Napoleonic era the department has recently acquired the valuable Oncken collection of manuscripts, containing the correspondence of the most distinguished English diplomats during the years 1812-1815 inclusive. Each year special courses and seminaries are offered on these two periods. In the seminaries, the student is introduced in a critical way to the best sources and investigations are begun that may lay the foundation for research work abroad. To take advantage of these courses, the student should have had general courses on the French revolution and the Napoleonic era, some undergraduate training in the use of sources, and should have acquired a reading knowledge of French. With such a preparation, it is possible to take the master's degree in one year. When the student is not properly prepared, the training may be

secured in the undergraduate course offered by the department. This preparatory work may be done in one year, if the student has already acquired in undergraduate courses a fair working knowledge of European history.

Master of Arts—Second Minor: At least eight hours of graduate work; two years of undergraduate work are required before graduate work can be entered upon. First Minor: Same as 1, 2, 3, and 4 for major. Major: (1) an acquaintance with the history of Europe from the beginning of Greek history to 1914; (2) a knowledge of the literature of European history, consisting of the best known sources in English, French and German, and the most important works of secondary writers; (3) an acquaintance with bibliographical aids and historical atlases; (4) a theoretical knowledge of the methods of historical research; (5) a thesis based on the sources.

COURSES

[17. **The French Revolution**—Open to students who have had one year's work in the department. Two hours attendance. Two hours credit. First semester. *Not given in 1917-1918.* Fling]

[18. **The Napoleonic Era**—The requirements are the same as for course 17. Two hours attendance. Two hours credit. Second semester. *Not given in 1917-1918.* Fling]

19. **Europe in the Nineteenth Century**—The requirements are the same as for course 17. Two hours attendance. Two hours credit. First semester. Fling

20. **Europe in the Nineteenth Century**—19 continued. Second semester.

23. **Seminary on the French Revolution**—One hour attendance. One hour credit. First semester. Fling

24. **Seminary on the French Revolution**—23 continued. Second semester.

59. **Seminary on Napoleonic Period**—One hour attendance. One hour credit. First semester. Needham

60. **Seminary on Napoleonic Period**—59 continued. Second semester.

69. **Seminary on the Legislative Assembly**—One hour attendance. One hour credit. First semester. Pfeiffer

70. **Seminary on the Legislative Assembly**—69 continued. Second semester.

25. **Historical Methods**—Detailed lectures on the problems of historical research and construction, accompanied by readings in the best English, French, and German monographs and by practical exercises. One hour attendance. One hour credit. First semester. Fling

26. **Historical Methods**—25 continued. Second semester.

49. **Seminary on French Revolution**—One hour attendance. One hour credit. First semester. Fling

50. **Seminary on French Revolution**—49 continued. Second semester.

57. **The Convention**—One hour attendance. One hour credit. First semester. Fling

58. **The Convention**—One hour attendance. One hour credit. Second semester. Fling

61. **The Italian Renaissance**—Two hours attendance. Two hours credit. First semester. Pfeiffer

62. **The Unification of Italy**—Two hours attendance. Two hours credit. Second semester. Pfeiffer

63. **The German Reformation**—Two hours attendance. Two hours credit. First semester. Needham

64. **The Unification of Germany**—Two hours attendance. Two hours credit. Second semester. Needham

[65. **Medici and the Renaissance at Florence**—Two hours attendance. Two hours credit. First semester. *Not given in 1917-1918.* Pfeiffer]

[66. **Cavour and the Struggle for Italian Unity**—Two hours attendance. Two hours credit. Second semester. *Not given in 1917-1918.* Pfeiffer]

[67. **The Thirty Years War**—Two hours attendance. Two hours credit. First semester. *Not given in 1917-1918.* Needham]

[68. **Frederick the Great**—Two hours attendance. Two hours credit. Second semester. *Not given in 1917-1918.* Needham]

FARM MANAGEMENT

Professor Filley (*Head of Department*), Assistant Professor Spafford, Instructor Rhoades

Farm Management is the business side of farming. It deals with the problems which confront every farmer in the organization and management of his farm. The farm is considered as a business investment from which the owner and operator wish to secure the greatest continuous profit.

COURSES

1. **Farm Documents**—This course deals with the legal phase of the farm business. Contracts, leases, deeds, mortgages, abstracts, negotiable instruments and other legal papers of which the farmer should have a working knowledge are discussed. Some time is given to those parts of the Nebraska law, such as the provisions regarding live stock and labor, which bear most directly upon farm management problems. Open to all but

freshmen. Two hours attendance. Four hours preparation. Two hours credit. First semester. Rhoades

2. **Farm Accounts**—A practical system of cost accounts for the farmer. Each student keeps a set of books which shows the cost of the various farm operations for the year, and the gain or loss upon each farm enterprise. Open to all but freshmen. Two hours lecture. Two hours laboratory. Two hours outside preparation. Two hours credit. Second semester. Rhoades

3. **Farm Organization**—Types of farming and their adaptation to different regions, size of the farm unit, capital, labor, systems of land tenure, maintenance of soil fertility, cropping systems, the farmstead, field arrangements, choice and purchase of a farm, and other factors of farm organization which affect farm profits are studied. Work based on text books, bulletins and Nebraska farm management survey records. Open to juniors, seniors, graduates, to second year men in the agricultural practice group, and to others by permission. Graduates of the School of Agriculture who have credit for Farm Management A may register for the course for two hours credit. Three hours attendance. Two hours laboratory. Four hours outside preparation. Three hours credit. First semester.
Filley, Spafford, Rhoades

4. **Farm Management Seminar**—Prerequisite: Course 3. A continuation of course 3, dealing with specific problems in Farm Management. Each student investigates and reports upon some particular problem. Three to fifteen hours meeting, preparation, and library. One to five hours credit. Second semester. Filley, Spafford, Rhoades

11. **Marketing of Farm Products**—This course deals with such problems as producers' and consumers' prices, wholesale and retail marketing, competition and coöperation. The marketing of cereal crops is studied in detail, the grain being traced from producer to consumer. This includes the study of the farmers' elevator movement, railway rates, grain exchanges, grain warehouses, and other factors affecting prices. Open to juniors, seniors, graduates, second year men in the Agricultural Practice Group and others by permission. Two hours attendance. Four hours preparation. Two hours credit. First semester. Filley, Spafford

12. **Marketing of Farm Products**—11 continued. The marketing of live stock and live stock products is studied in detail. Different types of animals are traced from the farm to the consumers' table. The latter part of the semester is devoted to a study of the retail store. Two hours credit. Second semester. Filley, Spafford

7. **Farm Management Survey**—Prerequisite: Courses 3 and 4. Field work, tabulation, and analysis of data. It is designed to train students for field work and to give them a first hand knowledge of Nebraska farm conditions. Field work may be done during vacation. Admission by

consent of the instructor. Three to fifteen hours meeting, field work, tabulation of data and library. One to five hours credit. First semester.
Filley, Spafford

8. **Farm Management Survey**—7 continued. Second semester.

GEOGRAPHY AND CONSERVATION

State Conservation and Soil Survey

Professor Condra (*Head of Department*), Professor Bengtson, Professor Brownell, Professor Loveland, Miss Nelson, Mr. Seabury, Miss Anderson, Mr. Noble

The State Conservation and Soil Survey is directed from this department. The Soil Survey is conducted on a basis of co-operation between the national government and the state. This relation gives opportunity for practical training in advanced work and also for the employment of some advanced students in state service.

By co-operation with other departments this department is able to offer preparation for work in Soil Survey and in Real Estate. Certain courses may be grouped after the general requirements of the Colleges of Agriculture and Arts and Sciences are met, affording specialization along the above lines during the sophomore, junior and senior years. Students wishing to take advantage of this training should elect their Major in the department of Geography and Conservation, and on first consultation with the departmental adviser should indicate which one of the vocational lines he intends to follow. Graduate instruction leading to the second and third degrees is offered. Theses are based on original work done in the laboratory and field.

COURSES

12. **Laboratory Course in Regional Geography**—Intensive study of selected regions of the United States designed to furnish students the preparation necessary for accurate independent work. Two hours credit. Second semester. Bengtson

17. **Seminar**—Primarily for graduate students. Special research problems. Credit determined by results and time. First semester.
Department Staff

18. **Seminar**—Course 17 continued. Second semester.

23. **Soil Survey**—A field course in practical soil classification, description, and mapping. The methods used in state and national surveys exemplified. Designed for Agriculture, Engineering, and special students. Autos are used for field reconnoissance. Open to advanced students registered by permission. Two hours credit. First and second semesters.
Condra, Bengtson

24. **Soil Survey**—Course 23 continued.

GEOLOGY

Professor Barbour (*Head of Department*), Associate Professor Schramm, Assistant Professor Barbour, Assistant Professor Webster, Mr. Ellis

COURSES

34. **Economic Geology**—A study of the commercial ore minerals, their occurrence, distribution and economics, with special emphasis upon the ores of iron, copper, zinc, lead, gold and silver. Two hours attendance. Four hours laboratory and library. Two hours credit. Second semester. Schramm

35. **Economic Geology**—A study of the non-metallic minerals, coal, oil, gas, and other hydro-carbons, building stones, clay, cements, saline, and associated substances, fertilizers, abrasives, minor minerals, precious stones, and underground waters. Four hours laboratory and library. Two hours credit. First semester. Schramm

35a. **Economic Geology**—A continuation of course 35. Four hours laboratory and library. Two hours credit. Second semester. Schramm

43. **Clays**—An elementary study of the origin, properties, classification, distribution, uses, and economics of clays. Two hours credit. First semester. Ellis

15. **Mineralogy**—Blow-pipe analysis of minerals. One, two or three hours attendance. Two, four or six hours laboratory. One, two or three hours credit. First and second semesters. Schramm

16. **Mineralogy**—15 continued. First and second semesters.

17. **Crystallography**—Crystallographic forms and measurements, mathematical relations, physical and optical properties. One hour attendance. Two hours laboratory. One hour credit. First and second semesters. Barbour, Webster

27. **Field Geology**—Study of structure and stratigraphy of type sections in carboniferous, cretaceous, and recent deposits in southeastern Nebraska. Mapping, photographing and sectioning quarries, clay and gravel pits; collecting and studying characteristic fossils. Economic study of brick plants, crushers, dredges, concrete establishments, and drainage canals. Finished report from field notes. One or two hours attendance. Two or four hours field and laboratory. One or two hours credit. First and second semesters. Schramm, Barbour

12. **Local Paleontology**—Special problems. Designed primarily for graduate students. Credit conditioned on results. First and second semesters. Barbour

19. **Index Fossils**—A study of index fossils for stratigraphic determination. One hour attendance. Two hours reading. Three hours laboratory. Two hours credit. First and second semesters. Barbour, Webster

GERMANIC LANGUAGES AND LITERATURES

Professor Fossler (*Head of Department*), Professor Grummann, Associate Professor Schrag, Assistant Professors Heppner, Alexis, Chamberlain, Thiel

MASTER OF ARTS

In order to prosecute graduate studies successfully the student should have had preliminary training in German in at least 30 college hours. These 30 hours must represent work covered in courses 5 to 20.

In general, a combination of philological and advanced literary work will prove most suitable to the needs and satisfactory progress of the student. Occasionally a greater degree of specialization, either in linguistics or literature, may be desired and will be permitted, if the student has the necessary preliminary training.

The following courses are suggested as suitable subjects for a Major:

FIRST SEMESTER

	Hours
1. Phonetics	1
2. Gothic	2
3. Any Advanced Literature Course, not already taken	3
4. Comparative Germanic Philology	3
5. Modern Literature Seminar	2
6. History of German Literature	3

SECOND SEMESTER

1. Principles of Linguistic History	2
2. Critical Study of Lessing and his work or History of German Literature (continued)	3
3. Old and Middle High German	3
4. Modern Literature Seminar	2
5. Thesis	2

Coordinate Minors may be chosen either from the more advanced undergraduate courses in the department of German or from other departments such as Latin, the Romance Languages, English and English Literature, History, Philosophy, Education. In all such cases the work elected must be rated by the department concerned as constituting graduate or advanced undergraduate work. The total Minors for both semesters should represent from 8 to 12 semester hours, and must be chosen with the consent of this department.

COURSES

11, 12. **Fourth Year—Advanced Literature**—The entire year is devoted to a study of the life and works of Goethe: (a) Pre-Weimar period, *Goetz von Berlichingen, Werther, Iphigenie;* (b) Italy and post-Italian

literary activity; (c) *Faust, Tasso.* Specially strong students are encouraged to supplement the work of the lecture room by preparing individual reports on various phases of the poet's life and art. Supplementary readings required of all in Grimm, Bielschowsky, Meyer, Thomas, etc. Each course three hours attendance. Three hours credit. Fossler

13, 14. **Fourth Year—The Modern Novel and Drama**—Representative works of Hauptmann, Sudermann, Fontane, Kretzer, Halbe, Wildenbruch, Fulda and others. Lectures, readings, and reports. Each course three hours attendance. Three hours credit. Grummann

15, 16. **History of German Literature**—From the origins to the middle of the Eighteenth Century. Besides reading representative portions of authors or periods under consideration, students are required to familiarize themselves with works of reference such as Scherer's *History of German Literature,* Franke's *Social Forces in German Literature,* Kluge's *Deutsche National-Litteratur,* or Biese's *Litteratur Geschichte.* Lectures, readings and reports. Three hours attendance. Three hours credit. First and second semesters. Schrag

[16a. **Lessing, His Life and Works**—The chief writings of the reformer of German literature are studied both in regard to their literary and critical aspects. Special attention is paid to the influence of English and French literature upon the beginning of German classicism. *Laokoon, Hamburgische Dramaturgie, Miss Sarah Sampson, Emilia Galotti* and *Nathan der Weise* are read and discussed in class. Supplementary readings, lectures and reports. Three hours attendance. Three hours credit. *Not given in 1917-1918.* Schrag]

17. **Germanic Mythology**—A study of the more important Germanic myths, their origin and relation to folk-lore. Two hours attendance. Two hours credit. First semester. Grummann

21. **Phonetics**—The work is based mainly upon Siever's *Phonetik.* One hour attendance. One hour credit. First semester. Grummann

22. **Old and Middle High German**—Selections from the older literature. Prose and verse. Selections from the *Nibelungenlied, Wolfram von Eschenbach, Walther von der Volgelweide, Hartmann von Aue,* etc. Transition stages between the Middle and the New High German. Three hours attendance. Three hours credit. Second semester. Grummann

23. **Comparative Germanic Philology**—The fundamental principles of linguistic science, with special reference to the prehistoric relationship, and historical development and differentiation of English and German. Three hours attendance. Three hours credit. Fossler

24. **Principles of Linguistic History**—The work is based principally upon Diekhoff's *The German Language,* and Behagel's *Die deutsche Sprache.* Two hours attendance. Two hours credit. Second semester.
Grummann

9. **Life and Culture in the Scandinavian Countries**—A study of the public and private life of the Scandinavian peoples in modern times. Their means of subsistence, government, family relations, religion, schools, relations to foreign countries, railways, canals, and kindred subjects will be considered. Lectures in English, illustrated by lantern slides, with assigned readings in the originals or in translation. One hour attendance. One hour credit. First semester. Alexis

10. **Old Norse (Icelandic)**—Kahle's *Altisländisches Elementarbuch.* Mogk's *Gunnlaugs saga ormstungu.* Two hours attendance. Two hours credit. Second semester. Alexis

GREEK HISTORY AND LITERATURE

Professor Lees (*Head of Department*)

Master of Arts—Requirements vary somewhat according to the preceding work of the student, but at least three years of study in the Greek language, including courses 1, 2, 3, 4, 5, 8 or their equivalents, should be completed before proceeding to graduate work. Majors and minors are arranged with each graduate student on consultation with the instructor. The following statements may indicate in general the requirements for majors and minors:—Major: At least five hours for a year of classroom work; the entire Iliad or Odyssey read in the original; one Attic author carefully read and style mastered; a thoro knowledge of the history and development of Greek literature from Homer to Aristotle; a thesis. First Minor: Six hours, at least, of classroom work from courses open to graduate students, supplemented by assigned library readings. Second Minor: One-half of the amount required for a first minor.

COURSES

7. **The Greek Drama—Aeschylus**—The Prometheus Bound, and one other drama. A discussion of the works and literary characteristics of Aeschylus. Three hours attendance. Three hours credit. First semester. Lees

8. **Sophocles**—The Antigone, and one other drama. Greek actors, costumes, and theatre. Three hours attendance. Three hours credit. Second semester. Lees

9. **Euripides**—Two dramas read in the original. Style and literary characteristics of Euripides. Two hours attendance. Two hours credit. First semester. Lees

10. **Aristophanes**—The Clouds and Frogs. Rise and development of Athenian comedy. Its relation to Roman and later comedy. Two hours attendance. Two hours credit. Second semester. Lees

11. **The Greek Historians**—Selected chapters from the works of Herodotus, Thucydides, and Xenophon. Two hours attendance. Two hours credit. First semester. Lees

12. **The Greek Orators**—Selected orations of Lysias and Demosthenes. Two hours attendance. Two hours credit. First semester. Lees

13. **Epic Poetry**—Selected readings from the Iliad and the Odyssey. A general survey of the content of the Homeric Poems. Two hours attendance. Two hours credit. First semester. Lees

14. **Lyric Poetry**—Selections from the leading Lyric poets. Two hours attendance. Two hours credit. Second semester. Lees

15. **Greek Philosophy**—The Phaedo of Plato. A survey of Greek Philosophy. Two hours attendance. Two hours credit. First semester. Lees

16. **Lucian**—Selected dialogs. An outline history of Greek Literature from Homer to the second century A. D. Two hours attendance. Two hours credit. Second semester. Lees

19. **New Testament Greek**—Selection from the Gospels. Two hours attendance. Two hours credit. First semester. Instructor

20. **New Testament Greek**—19 continued. Pauline Epistles. Second semester.

Sanskrit

The following courses in Sanskrit and comparative philology are open to advanced and graduate students. Altho they are intended primarily for graduate students in either ancient or modern languages, yet they may be profitably pursued by any advanced and aspiring student who desires to secure a broader basis for special study in his chosen linguistic field.

The aim of the work in Sanskrit is to give the student such a knowledge of basic grammatical forms and syntactical structure as to assist him greatly in the comprehension and mastery of similar phenomena in all our European languages.

COURSES

1. **Beginners' Course**—Inflections and conjugations. Whitney's Sanskrit Grammar and interpretation of an easy text. Two hours attendance. Three hours credit. First semester. Lees

2. **Elementary Sanskrit**—Selected readings from the Nala and the Hitopadeca as given in Lanman's Sanskrit Reader. Two hours attendance. Three hours credit. Second semester. Lees

3. **Sanskrit**—Selections from the Hitopadeca and the Manava Dharmacastra. One hour attendance. Two hours credit. First semester. Lees

4. **Sanskrit**—Reading and interpretation of selected hymns of the Rig-Veda. One hour attendance. Two hours credit. Second semester. Lees

Comparative Philology

The courses in comparative philology do not require nor presuppose a knowledge of Sanskrit.

5. **The Elements of Linguistic Science**—Comparative philology of the more familiar divisions of the Indo-European family of languages. Lectures and discussions. One hour attendance. One hour credit. First semester. Lees

6. **The Elements of Linguistic Science**—5 continued. Second semester.

HOME ECONOMICS

Professor Loomis (*Head of Department*), Assistant Professor Davis, Associate Professor Vance, Assistant Professor Fedde, Miss Brown, Miss Corbin, Miss VanKirk, Miss Canfield, Miss Curtiss

COURSES

6. **Dietetics**—A study of the chemical, physical and economic factors involved in the problems of human nutrition. To be offered for graduate as well as undergraduate work. Prerequisite: General, organic and food Chemistry, Physiology, Home Economics 3 and 4. Four hours credit.

105. **Advanced Problems in Food Study**—Lectures, conferences, library, and laboratory work on problems in the preservation and preparation of food. Prerequisite: Bacteriology 2a, Chemistry, Home Economics 3 and 4. Three to four hours credit.

106. **Dietetics**—Additional reference and conference work with individual problems in the study of actual dietaries and the planning of dietaries to meet the various needs. To be taken in connection with or following Home Economics 6. Graduate credit only. It is recommended that students registering for Home Economics 6 and 106 register also for Plant Pathology and Physiology 117 and 118, Comparative Physiology, and Agricultural Chemistry. Two to four hours credit.

117, 118. **Seminary on Home Economics Education**—A study of the development of Home Economics, with particular attention to the correlation of these with other subjects; the articulation of Home Economics work in the various grades of schools; the consideration of courses of study now in use; and the planning of courses that will meet the growing demand for vital, flexible, well balanced courses. Prerequisite: 24 hours undergraduate work in this department, educational courses sufficient to entitle student to State Certificate, and successful teaching experience in Home Economics. Two hours credit.

HORTICULTURE

Professor Howard (*Head of Department*), Associate Professor Hood, Associate Professor Cooper, Assistant Professor ————

COURSES

7. **Horticultural Problems**—Assigned problems in Horticulture. Experimental work in the laboratory, gardens, greenhouses, or orchards, planning experiments, and keeping records. Hours for consultation. Two to five hours credit. Registration only by permission of Instructors. First semester. Howard, Hood, Cooper, ————

8. **Horticultural Problems**—7 continued. Second semester.

10. **Genetic Seminar**—This course is given with a view of reviewing the experimental work in genetics. Prerequisite: Animal Husbandry 7 or Horticulture 25 or Zoology 32. One hour attendance. Two hours preparation. One hour credit. Second semester. Howard

19. **Systematic Pomology**—This course takes up in detail the systematic classification, nomenclature and discussion of tree, vine and bush fruits with the histories, origin and adaptability of each. The laboratory consists of the examination and classification of the various fruits. Prerequisite: Course 2. Two hours attendance. Four hours laboratory. Three hours preparation. Three hours credit. First semester. Cooper

23. **Landscape Design**—Topographical surveys and mapping with special reference to the methods used in landscape gardening; relation of topographic maps to landscape design; grading plans and working drawings, road and grade design. Design of school grounds, small parks, golf courses and the larger estates. Students should have preparation in systematic botany, plane surveying, mathematics, and free-hand drawing. Prerequisite: Courses 20, 21 and 22. Six hours laboratory. Three hours preparation. Three hours credit. First semester. ————

24. **Landscape Design**—23 continued. Second semester.

25. **Principles of Plant Breeding**—An elementary study of the principles underlying plant improvement, a study of the methods involved in applying the principles of heredity to the improvement of horticultural plants. Practice in the technique of crossing. Prerequisite: Botany 1 and 2 or Plant Pathology and Physiology 101 and 102, or Zoology 11 and 12. Two hours attendance. Four hours preparation and library. Two hours credit. First semester. Howard

JURISPRUDENCE AND PUBLIC LAW

Professor Hastings (*Head of Department*), Professor Maxey

Master of Arts—Complete courses, or major or minor courses, are arranged upon application.

Master of Laws—A candidate for the degree of Master of Laws must have received the degree of Bachelor of Laws from this University or from some approved law school, must complete an additional year's work of at least 16 hours a week in the College of Law or the Graduate College or both, and must present a suitable thesis embodying the result of original investigation and research. Before such student shall be entitled to the degree he must complete all the courses, elective as well as required offered in the College of Law for the degree of Bachelor of Laws.

COURSES

Jurisprudence

1. **History and System of the Common Law**—General survey of the legal system of English-speaking countries; courts, their organization and jurisdiction. Students taking this course should have had English History. Credited in the College of Law. Two hours attendance. Two hours credit. First semester. Hastings

[2. **Roman Law**—History and Institutes. Credited in the College of Law. Two hours attendance. Two hours credit. First semester. *Given in 1916-1917 and alternate years.* Maxey]

3. **Analytical and Historical Jurisprudence**—Introduction to legal theory. Credited in the College of Law. Three hours attendance. Three hours credit. Second semester. Maxey

Public Law and Diplomacy

1. **American Constitutional Law**—Cases on constitutional law. Credited in the College of Law. Three hours attendance. Two hours credit. First semester. Students taking this course should have had American History. Hastings

2. **American Constitutional Law**—1 continued. Cases on constitutional law. Prerequisite: Course 1. Credited in the College of Law. Three hours attendance. Three hours credit. Second semester. Hastings

3. **American Administrative Law I**—Law of public officers; extraordinary legal remedies. Credited in the College of Law. Two hours attendance. Two hours credit. First semester. Maxey

4. **American Administrative Law II**—3 continued. Taxation. Credited in the College of Law. Two hours attendance. Two hours credit. Second semester. Maxey

6. **International Law I**—Credited in the College of Law. Three hours attendance. Three hours credit. First semester. Maxey

7. **International Law II**—Advanced course. Specific problems of international law. Credited in the College of Law to students who do not count International Law I. Two hours attendance. Two hours credit. Second semester. Maxey

8. **European Diplomacy**—Two hours attendance. Two hours credit. First semester. Maxey

[9. **Comparative Constitutional and Administrative Law**—Comparative study of public law of the United States, England, Canada, and Australia. Two hours attendance. Two hours credit. First semester. *Given in 1916-1917 and alternate years.* Maxey]

10. **American Diplomacy**—[American History 22] Organization. Main diplomatic controversies. Two hours attendance. Two hours credit. Second semester. Maxey

[11. **Seminary on Consular Service**—Admission upon consent of the instructor. Two hours attendance. Two hours credit. Second semester. *Given in 1916-1917 and alternate years.* Maxey]

MATHEMATICS

Professor Davis (*Head of Department*), Professor Candy, Professor Engberg, Professor Brenke, Assistant Professor Blumberg, Assistant Professor Runge, Assistant Professor Babbitt, Miss Colpitts, Mr. Fitzpatrick

Required Undergraduate Courses—Courses 1, 2, 3, and 4 are prerequisite for all graduate work.

MASTER OF ARTS

Students working toward the Master's Degree are required to complete not less than 24 hours in addition to courses 1, 2, 3, 4, which must include courses 5, 6, 8, 22, 23 or their equivalents; also 6 hours in an allied subject, physics, astronomy or engineering; finally, an acceptable thesis.

DOCTOR OF PHILOSOPHY

The candidate must have not only an extended general knowledge of mathematics on the basis of the requirements for the degree of Master of Arts, but must also devote special attention to some line of modern research, consulting both standard treatises and the various mathematical journals. The results of this work are to be presented and discussed from time to time in the mathematical seminary and finally embodied in a thesis.

COURSES

7. **Theory of Probability**—Three hours attendance. Three hours credit. Second semester. Engberg

10. **Higher Algebra**—Three hours attendance in one of the following: (a) Theory of Equations, (b) Galoi's Theory, (c) Theory of Quantics. Three hours credit. First semester. Blumberg

11. **Higher Algebra**—10 continued. Second semester.

12. **Theory of Functions**—Three hours attendance. Three hours credit. First semester. Brenke

13. **Theory of Functions**—12 continued. Second semester.

14. **Elliptic Functions**—Three hours attendance. Three hours credit. First semester. Davis

15. **Elliptic Functions**—14 continued. Second semester.

16. **Harmonic Analysis**—Applied to the Partial Differential Equations of Mathematical Physics. Source of these equations. Methods of solution. Theory of Fourier's series. Other series of normal functions. Solution. Three hours attendance. Three hours credit. First semester. Brenke

17. **Harmonic Analysis**—16 continued. Second semester.

18. **Mathematical Logic**—Three hours attendance. Three hours credit. First semester. Davis

19. **Point Sets**—Three hours attendance. Three hours credit. Second semester. Davis

20. **Projective Geometry**—Three hours attendance. Three hours credit. First semester. Engberg

21. **Foundations of Algebra and Geometry**—Three hours attendance. Three hours credit. Second semester. Brenke

22. **Advanced Analytical Geometry**—Prerequisite: Course 5. Three hours attendance. Three hours credit. First semester. Candy

23. **Advanced Analytical Geometry**—22 continued. Second semester.

24. **Modern Geometry**—Two hours attendance. Two hours credit. First semester. Blumberg

25. **Modern Geometry**—24 continued. Second semester.

26. **Imaginaries in Geometry**—Two hours attendance. Two hours credit. First semester. Davis

27. **Reading Courses**—Under direction of members of the department, such as Heath's Euclid, Non-Euclidian Geometry, Comparative study of Text Books, Graphic representation, Transfinite numbers. One to five hours credit.

28. **Differential Geometry**—Two hours attendance. Two hours credit. First semester. Davis

29. **Differential Geometry**—28 continued. Second semester.

30. **Vector Analysis**—Three hours attendance. Three hours credit. First semester. Davis

31. **Continuous Groups**—Three hours attendance. Three hours credit. First semester. Brenke

32. **Continuous Groups**—31 continued. Second semester.

33. **Calculus of Variations**—Three hours attendance. Three hours credit. Brenke

34. **Theory of Numbers**—Three hours attendance. Three hours credit. Second semester.

35. **Integral Equations**—Three hours attendance. Three hours credit. First semester. Blumberg

41. **Statistics**—Statistical problems. Interpretation of statistics. This course should be taken in connection with Economics 28. Prerequisite: Courses 1 and 2. Three hours attendance. Three hours credit. First semester. Engberg

42. **Insurance**—Mathematical principles of insurance, especially of life insurance. This course should be taken in connection with Economics 6. Prerequisite: Courses 1 and 2. Three hours attendance. Three hours credit. Second semester. Engberg

Biometry

The mathematical theory of evolution. A mathematical analysis of botanical and biological problems. An extended knowledge of mathematics is not necessary, altho of great aid. The work is intended primarily for advanced students in the natural sciences who can apply this work to their researches, but it is open to other students.

COURSES

45. **A Review of Preliminary Mathematics**—Followed by study of various frequency curves and applications to individual problems. Two hours attendance. Two hours credit. First semester. Engberg

46. **A Review of Preliminary Mathematics**—45 continued. Studies in error correlations of frequency constants, variation, organic correlation, regression, heredity, spurious correlation and fixture of type. Two hours attendance. Two hours credit. Second semester.

47. **Studies in Organic and Fraternal Correlation and Problems in Heredity**—One hour attendance. One to three hours credit. First semester. Engberg

48. **Studies in Organic and Fraternal Correlation and Problems in Heredity**—47 continued. Second semester.

MECHANICAL ENGINEERING

Professor Hoffman (*Head of Department*), Associate Professor Dean, Associate Professor Elliott, Assistant Professor Bunting, Mr. Ichler, Mr. Smith

COURSES

8. **Economics of Shop Production**—Discussions relating to manufacturing processes, routing of the work thru the shop, effect of shop design on shop efficiency, time systems and cost accounting. Prerequisite: Courses 1, 2, 3, 4 and 5. Two hours attendance. Four hours preparation. Two hours credit. Second semester. Ichler

10. **Steam Engineering**—Elementary study of thermodynamics. Theory of heat engines. Forms and mechanism of steam machinery. Economy of operation and adaptibility to a given service. Differential and integral calculus and applied mechanics required. Four hours attendance. Eight hours preparation. Four hours credit. First and second semesters. Hoffman, Elliott

11. **Steam Boilers**—Design and construction of steam boilers, furnaces, settings; their safety and economy of operation. Prerequisite: Course 10. Two hours attendance, occasional drawing. Four hours preparation. Two hours credit. First semester. Hoffman

13. **Thermodynamic Applications**—Advanced study of the thermodynamics of gases and vapors and the applications of the science to heat engines, air compressors, injectors, refrigerating machinery, steam turbines, etc. Prerequisite: Course 10. Three hours attendance. Six hours preparation. Three hours credit. First semester. Elliott

14. **Building Sanitation**—Principles of the design of plumbing systems for air, gas and water. Sanitary necessity of sewerage. Discussion of sewage disposal and drainage systems. Two hours attendance. Four hours preparation. Two hours credit. Second semester. Hoffman

15. **Fuel Testing Laboratory**—Proximate analyses of coal and analyses of flue gases; determination of heating value of coal, gas and fuel oils; the testing of lubricants and friction. Six hours laboratory. Two hours credit. Second semester. Elliott

16. **Mechanical Engineering Laboratory**—Calibration of instruments, indicator practice, valve setting, efficiency tests of engines and boilers, injectors, pumps, gas engines. The measurement of power. Course 10 prerequisite or taken at the same time. One hour attendance. Eight hours laboratory. Three hours credit. First and second semesters. Dean

17. **Mechanical Engineering Laboratory**—Complete tests of simple and compound Corliss engines, air compressors, gas engines, steam pumps, and refrigerating machinery. Prerequisite: Course 16. One hour attendance. Eight hours laboratory. Three hours credit. First semester. Dean

18. **Experimental Hydraulics**—Experiments on the flow of water thru orifices and nozzles and over weirs; the testing of hydraulic motors and pumps. Prerequisite: Civil Engineering 11. Six hours laboratory. Two hours credit. Second semester. Dean

19. **Heating and Ventilation**—Theory and design of the various systems for heating and ventilating buildings, including hot air, hot water, steam and the plenum and vacuum systems, and central station heating. Prerequisite: Course 10. Two hours attendance. Four hours preparation. Two hours credit. First semester. Hoffman

20. **Steam Power Plant Design**—The design of a complete steam power plant and the formulation of specifications therefor. Prerequisite: Courses 10 and 11. Occasional lectures. Six hours drawing. Two hours credit. Second semester. Hoffman

22. **Gas Power Engineering**—The theory and design of gas, gasoline and oil engines; gas producer practice; the combustion of gaseous fuels. Prerequisite: Course 10. Two hours attendance. Four hours preparation. Two hours credit. Second semester. Elliott

24. **Power Transmission**—Transmission of power by shafting, belts, ropes, water, compressed air, gas. Course 10 prerequisite or taken at the same time. Two hours attendance. Four hours preparation. Two hours credit. Second semester. Hoffman

31. **Hydraulic Motors and Pumping Machinery**—Theory of water-wheels, turbines, pressure engines and pumps. Analyses are made of hydraulic power plant arrangement and operation. Prerequisite: Civil Engineering 11. Three hours attendance. Six hours preparation. Three hours credit. First semester. Hoffman

27. **Advanced Laboratory Investigations**—Special investigations of problems relating to steam engines and boilers, gas engines, etc. Nine or twelve hours laboratory. Three or four hours credit. First semester. Dean

28. **Advanced Laboratory Investigations**—27 continued. Nine or twelve hours laboratory. Three or fours hours credit. Second semester. Dean

30. **Advanced Investigations in Fuel Testing**—15 continued. Six or nine hours laboratory. Two or three hours credit. First or second semester. Elliott

32. **Advanced Investigations in Heating, Ventilating and Air Conditioning**—19 continued. Six or nine hours laboratory. Two or three hours credit. First or second semester. Hoffman

34. **Investigations in Refrigeration**—A study in the theory, design and operation of ice and refrigerating machinery. Prerequisite: Courses 13 and 19. Occasional recitations, private investigations and consultations. Two or three hours credit. Second semester. Hoffman, Dean

PHILOSOPHY

Professor Wolfe (*Head of Department*), Professor Alexander, Professor Hinman, Assistant Professor Hyde, Mr. Jenkins, Miss Armstrong, Mr. Showalter, Mr. Warden

The primary aim of work in Philosophy is to serve as an organizing discipline in a general education, and to correct the narrowness often incident to specialization. It is an efficient means for the development of

breadth, balance, culture, and maturity. It lies nearer today than ever before, probably, to the various sciences, social, historical, biological, and physical, on the one hand, and to the requirements of practical life on the other. Students seeking to make this use of Philosophy may begin with either course 1, course 3, or course 4 as early as the first semester of the sophomore year, and should carry a course each semester thereafter, the complete program including both Psychology and General Philosophy. Third and fourth year students may also begin their work in Philosophy with any one of the following courses: 21, 30, 51. After the first introductory semester, courses from all sub-groups within the department are equally open to the student.

Another very important aim of the department is to aid in the professional training of teachers. Those who wish to secure the University Teachers' Certificate must take courses 1 and 2 in Elementary Psychology.

The department as now organized has full professors representing each main division of the subject. It is well supplied with library and laboratory facilities, and is enabled to offer ample facilities for graduate work.

Major or minor courses for advanced degrees are arranged for in Psychology, in Aesthetics, in Ethics, in Logic and Metaphysics, and in History of Philosophy. No special statement of the number of hours required either for the degree of Master of Arts or that of Doctor of Philosophy need be made. Courses are outlined for each individual case in conformity with the general regulations laid down by the Graduate Faculty. Owing to the nature of philosophy as a fundamental discipline in touch with all sciences, graduate students pursuing majors in other specialties will often find a minor in Philosophy of large value.

COURSES

I. Psychology

11. **Experimental Psychology**—Chiefly laboratory work. The student learns to manipulate all standard apparatus, and becomes somewhat familiar with present laboratory problems. Methods of investigation and of dealing with data are considered. In the second semester about half of the time is devoted to intensive investigation of some problem begun early in the year. Two hours credit. First semester. Wolfe

12. **Experimental Psychology**—11 continued. Second semester.

13. **Genetic Psychology**—A comparative study of the animal mind. Readings and discussions on the methods of investigation, material accumulated, and conclusions reached. Beginning with the lowest animals, evidences of intelligence are sought in several representative groups. Effort is made to realize the resemblances and differences between the mind of the higher animals and that of man. Two hours attendance. Two hours credit. First semester. Wolfe

14. **Genetic Psychology**—A study of the child mind in development. Essentially a course in the evolution of the individual. The class surveys the material of "child study" on infancy, childhood, and adolescence, reviews normal psychology, and studies old age. A few weeks are given to certain typical forms of abnormal mind, arrested development and genius. Two hours attendance. Two hours credit. Second semester. Wolfe

16. **Educational Psychology**—A practical study of the factors which influence the development of body and mind. May be applied on required hours in education. Two hours attendance. Two hours credit. Second semester. Wolfe

II. Ethics

23. **Ethical Theory**—The object of this course, running for two years, is the intensive study of dominant types of modern ethical systems. Each semester a section of the history of recent ethical debate is chosen for study, and the relevent classical works are analyzed. During 1917-1918 the development of intuitionism, utilitarianism, and idealism will be examined, involving familiarity with the writings of Martineau, Bentham, Mill, Sidgwick, Kant, Green, Bradley and Taylor. Two hours attendance. Two hours credit. First semester. Hinman

24. **Ethical Theory**—23 continued. Second semester.

[25. **Ethical Theory**—During 1918-1919 the object of study will be the evolution of man's moral nature and conduct, and the evolutionary theory of ethics. The relation of this theory to utilitarianism and to idealism will be developed, and attention given to the writings of Darwin, Spencer, Stephen, Sutherland, Westermarck, Alexander, Wundt, and Hobhouse. Two hours attendance. Two hours credit. First semester. Hinman]

[26. **Ethical Theory**—25 continued. Second semester.]

III. Metaphysics and Philosophy of Science

30. **Introduction to Philosophy**—Develops the philosophical conception of Reality as Mind, and applies it in some detail to the interpretation of the system of the sciences. Deals with such ruling ideas as those of matter, force, life, heredity, evolution, purpose, mind, reason, God. Designed to meet the needs of the scientific and general student, and to serve also as a preparation for further work in philosophy. Lectures. Three hours attendance. Three hours credit. First and second semesters. Hinman

30a. **Philosophical Themes**—Students who have taken or are taking course 30 may mature themselves in this subject and secure additional credit by preparing papers in connection with assigned topics, and carrying out the library work which these involve. No further class attendance. One to three hours credit. Hinman

33. **Advanced Metaphysics**—A systematic study of contemporary metaphysical thought, based upon an analysis of the debate between the absolute idealists and their recent critics. May be carried profitably by the student who has completed course 30. Two hours attendance. Two hours credit. First semester. Hinman

34. **Advanced Metaphysics**—33 continued. Second semester.

37. **Logic of Science**—Deals with the nature of conception, judgment and inference, with reference both to general philosophical results and to the methodology of science. Bosanquet's larger *Logic* is the basis of the course. Two hours attendance. Two hours credit. First semester. Hinman

38. **Logic of Science**—37 continued. Second semester.

44. **History of Culture**—The culture of medieval times and of the Italian Renaissance; the 18th century Enlightenment and humanitarianism; humanism of today. Three hours attendance. Three hours credit. Second semester. Alexander

V. History of Philosophy

51. **History of Philosophy**—Survey of the principal philosophical systems in their development and relation to the political and social conditions of their times. Three hours attendance. Three hours credit. First semester. Alexander

52. **History of Philosophy**—51 continued. Second semester.

53. **Greek and Medieval Philosophy**—Special studies in the history of philosophy for advanced students. One session weekly. Two hours credit. First semester. Alexander

54. **Greek and Medieval Philosophy**—53 continued. Second semester.

55. **Advanced German Reading**—Some philosophical or psychological work will be read in German. The purpose is to acquaint students in this department with the technical German vocabulary peculiar to his line of work and to help him to think in German as he reads. Two hours attendance. Two hours credit. First semester. Hyde

56. **Modern German Philosophy**—55 continued. Second semester.

57. **German Idealism**—Kant and Hegel. First semester devoted to the Critical philosophy. Brief study of background of Criticism in English Empiricism; careful study of teachings of Kant's three Critiques. Two hours attendance. Two hours credit. First semester. Hinman

58. **German Idealism**—57 continued. Development of Kantian doctrine in its idealistic phases by his successors briefly traced; culmination of post-Kantian Idealism, studied at length in Hegel's Smaller Logic. Second semester. Hinman

57a. **English Empiricism in the Nineteenth Century**—Mill and Spencer. After a brief study of Hume, the development of Empiricism will be traced in the Associational school, and its culminating phases in the philosophical views of John Stuart Mill will be analyzed in detail. Two hours attendance. Two hours credit. First semester. Hinman

58a. **English Empiricism in the Nineteenth Century**—57a continued. Spencer's Synthetic Philosophy. Second semester.

VI. History and Philosophy of Religion

60. **Philosophy of Religion**—Nature and meaning of religion and grounds of religious beliefs in view of the rational interpretation of the universe made by modern science and philosophy. Origin and evolution of religion, the psychology of religion, arguments for the existence of God, modern conception of God and Immortality. One hour attendance. One hour credit. Second semester. Hinman

61. **History of Religion**—After a short examination of the origin of religion and its form among primitive peoples its history is traced at some length among the Aryans, and more briefly among Chinese, Japanese, Egyptians, Babylonians, and Semitic races. The greater religions are analyzed in order to explain and evaluate the philosophical views which they involve. Three hours attendance. Three hours credit. First semester. Hinman

62. **History of Religion among the Hebrews** (Briefer course)—Essentially a library course on the development of Israel's religious ideals, as reflected in the Old and New Testaments, and interpreted in the spirit and by the methods of the higher criticism. Open only to students who have had course 30 or course 61, or other work of equal value for training to critical and constructive thinking in this field. Lectures, conferences, and readings. Three hours credit. Second semester. Hinman

63. **Philosophy and Psychology of Religion**—Advanced course. An extensive survey of recent literature primarily in the philosophy of religion and in the psychology of religion so far as this has an immediate bearing upon philosophical issues. Two hours attendance. Two hours credit. First semester. Hinman

64. **Philosophy and Psychology of Religion**—63 continued. Second semester.

71. **Psychological Seminary**—The year will be given to the study of some problem, or group of closely allied problems, to be definitely determined by the interests of the members of the seminary. Seniors who have had 1 and 2, and who are taking 11 or 12 may elect this course. Two hours attendance. Two hours credit. First semester. Wolfe

72. **Psychological Seminary**—71 continued. Second semester.

73. **Ethical Seminary**—Study of special problems in ethics. Two hours attendance. Two hours credit. First semester. Hinman

74. **Ethical Seminary**—73 continued. Second semester.

75. **Seminary in Logic and Metaphysics**—Two hours attendance. Two hours credit. First semester. Hinman

76. **Seminary in Logic and Metaphysics**—75 continued. Second semester.

PHYSICS

Professor Skinner (*Head of Department*), Professor Moore, Professor Almy, Professor Tuckerman, Assistant Professor Tool, Mr. Gish, Mr. Spencer

For graduate students instruction is given in both theoretical and experimental physics. Lectures are given in the general theoretical branches and are offered on special topics in which the lecturer is immediately interested.

In theoretical physics courses 21, 22, 23, 24, 25, 26 are given in a sequence of six semesters with four hours lecture weekly, while the others are given as the occasion demands.

For the degree of Master of Arts the candidate may offer simply a major in physics, but is advised to offer also a minor in some related subject. One year of purely graduate study may be sufficient to attain the degree. No thesis is required.

For the degree of Doctor of Philosophy three years work, including a completed research, is required. In addition to the work in physics and mathematics the candidate must offer also a minor in either chemistry, astronomy or philosophy.

COURSES

19. **Advanced Experimental Physics**—Exact determination of physical constants, requiring a careful duplication of some classic experiments in physics, in which a single experiment is expected to cover a period of about one semester, or an introduction to research. Fifteen hours laboratory. Five hours credit. First semester. Moore

20. **Advanced Experimental Physics**—As in 19. Second semester.

Research—Original investigation of some problem in physics. No time limit imposed. Less than fifteen hours a week is not advisable.
Skinner, Moore, Tool

Theoretical Physics

21. **Dynamics of Discrete Particles**—Formal development of the general principles of mechanics: D'Alembert's Principle; Gauss' Principle of Least Constraint; Hamilton's Principle of Least Action; La Grange's

Equations; Hamilton's Canonical Equations; applications to special problems. Four hours lecture. Four hours credit. First semester.
Tuckerman

22. **Elasticity and Hydrodynamics**—Elasticity: deformations of homogeneous media, isotropic and crystalline; vibrations of isotropic media; applications to special problems. Hydrodynamics: irrotational and vortex motions; scalar and vector potentials; application to mechanical theories of electromagnetic phenomena. Four hours lecture. Four hours credit. Tuckerman

23. **Electricity and Magnetism**—The fundamental equations of Maxwell, applied to the theory of Static, Stationary, Quasistationary, and Kinetic Electromagnetic field. A short outline of Vector Analysis and Quaternions (Hamiltonian and Continental Notations) is given as an introduction. Four hours attendance. Four hours credit. First semester.
Tuckerman

24. **Electro-Optics**—Electromagnetic oscillations and their application to the theory of light. 23 continued. Second semester. Tuckerman

25. **Thermodynamics**—The classical theory of thermodynamics and its application to certain types of physical and chemical phenomena, including heat radiation. The course concludes with a brief comparison of the classical theory with the modern statistical theories. Four hours lecture. Four hours credit. Second semester. Tuckerman

26. **Heat Radiation and Quantum Theory**—The statistical interpretation of the entropy principle and its application to Heat Radiation, leading to the introduction of Planck's "quantum." The Quantum Theory as a guiding principle in modern investigation. Four hours lecture. Four hours credit. Tuckerman

27-28. **Optics**—Theory of ray systems; application to optical instruments. Three hours credit. First and second semesters. Skinner

29. **Thermo- and Electro-Chemistry**—Three hours credit. One semester. Moore

30-31. **Theory of Changes of Physical State and Chemical Constitution of Bodies**—Two hours credit. First and second semesters.
Moore

32. **Electric Conduction in Gases**—Ionization; ionic velocities; cathode rays; radioactivity; electron theory. Two hours credit. One semester. Tool

Physical Colloquium—Instructors and graduate students meet weekly for presentation of short papers on the progress of their investigations and those reported in current periodicals.

PHYSIOLOGY AND PHARMACOLOGY

Professor Lyman (*Head of Department*), Assistant Professor Day, Mr. Thompson, Doctor Johann, Doctor Stevens, Miss Nelson

Graduate work in physiology and pharmacology is open to those students who have completed courses 1 and 2 or 3 as described below and who have had sufficient training in related branches and in the languages. Work leading to the degrees of Master of Arts and Doctor of Philosophy must be research of such a type as to merit publication in the standard journals. The time necessary in each case is that required by the Graduate College. Candidates will consult with the head of the department before registering.

COURSES

9. **Physiological Standardization**—An advanced course in the methods of physiological standardization. One hour attendance. Five to fourteen hours laboratory. Two to five hours credit. Second semester. Lyman, Thompson

10. **Materia Medica**—A didactic and laboratory study of the origin, natural history, preparations, and methods of using individual drugs. For students of dentistry. Two hours attendance. Two hours laboratory. Two hours credit. Second semester. Johann

20. **Research**—Investigation of some physiological or pharmacological problem which the candidate must select after consultation with the person in charge of the department. First and second semesters. Lyman

PLANT PATHOLOGY AND PHYSIOLOGY

Professor Wilcox (*Head of Department*), Associate Professor Link, Assistant Professor Davis

GENERAL INFORMATION

The offices, laboratories and lecture rooms are located in Plant Industry Hall. For use in the instructional work the department has a very extensive collection of lantern slides, charts, and other illustrative material. An extensive pathological herbarium and collection of economic plants are being developed as rapidly as possible. The large private library of the head of the department of Plant Pathology and Physiology, particularly complete in phytopathology, is available for the use of advanced students. A greenhouse has been arranged and specially equipped for experimental work in physiology and pathology.

A limited number of advanced students with proper training can be offered exceptional opportunities for research work in physiology and pathology. In some cases it is possible for such students to receive compensation for work done in connection with problems being investigated by the department.

The department is especially prepared to offer graduate work in pathology and physiology. To successfully undertake research work in these subjects students should have a broad training in botany, chemistry, and zoology; should be able to read French and German and should have taken at least six hours of work in this department. Before registering, students should consult the head of the department.

COURSES

115. **Advanced Plant Physiology**—A detailed study of the problems of plant physiology outlined in courses 105, 106. Prerequisite: Courses 105, 106 and Agricultural Chemistry 101, 102, 103 or equivalents. Three hours lecture. Six or twelve hours laboratory and preparation. Two to five hours credit. First semester. Link

116. **Advanced Plant Physiology**—115 continued. Second semester.

117. **General Plant Pathology**—A broad survey of the development and present condition of our knowledge of plant disease. Special attention will be given to such subjects as the physiology and cytology of resistance and immunity, origin of parasitism, specialization, epidemics and climatic factors, malnutrition and unfavorable chemical and physical factors. Prerequisite: Courses 105, 108, and Botany 15, 20. Three hours lecture. Six hours laboratory. Three hours credit. First semester. Wilcox

118. **General Plant Pathology**—117 continued. Second semester.

125. **Problems in Plant Physiology**—Assigned problems in plant physiology. Laboratory work with hours for consultation. Two to five hours credit. First semester. Link, Davis

126. **Problems in Plant Physiology**—125 continued. Second semester.

127. **Problems in Plant Pathology**—Assigned problems in plant pathology. Laboratory work with hours for consultation. Two to five hours credit. First semester. Wilcox

128. **Problems in Plant Pathology**—127 continued. Second semester.

POLITICAL SCIENCE AND SOCIOLOGY

Professor Howard (*Head of Department*), Professor Webster, Professor Aylsworth, Associate Professor Williams, Lecturer Sheldon

The minimum requirement for the degree of Master of Arts is one full year's work or the equivalent of about thirty class-hours, including a thesis. A candidate may devote his entire time to the work of the department; or he may divide it between a major and a minor. A minor is the equivalent of nine class-hours. The selection of courses is influenced by the character of the thesis.

The minimum requirement for the degree of Doctor of Philosophy is three full years' work, of which about three-fifths, or the equivalent of about sixty class-hours, must be given to the major subject. The remaining two-fifths of the time, or the equivalent of about forty class-hours, must be devoted to a first minor or divided equally between two second minors. The particular courses in the major subject are selected with regard to the character of the thesis and with reference to the candidate's aim and preparation. The thesis must be the result of the sustained investigation of the original materials. Without undergraduate training in thesis-writing or research courses, it is difficult to take either the master's or the doctor's degree in the minimum period. Preferably minors may be selected in the departments of economics, history, or public law; but minors will be accepted in education, philosophy, or other departments, according to the needs of the candidate. In all cases a good knowledge of economics and history is required.

The facilities available for graduate study and research in both political science and sociology are excellent. The libraries of the University, city, state and the State Historical Society afford the student access to an aggregate of about 290,000 volumes. The University Library contains the standard authorities and reference works on institutional history, social science, anthropology, ethnology, Roman law, historical jurisprudence, political economy, philosophy, government, politics, administration and statistics. It is especially strong in public documents and other material, source and secondary, for the investigation of problems in American government and administration. The State Library of 80,000 volumes supplements those of the University and the College of Law. It is one of the best law libraries in the West—rich in materials for a comparative study of government and legislation in the different states. In the Historical Society's collections and the public archives at the state Capitol there is accessible a mine of source material for investigating state and local government and administration in Nebraska. When these resources prove inadequate in special investigations, desired books will be purchased or temporarily borrowed from other libraries.

The location of the University at the state capital gives special opportunities for personal observation and study of the actual problems and practical workings of state and municipal legislation and administration.

The Nebraska Legislative and Municipal Reference Bureau is now by act of the Nebraska legislature of 1911 affiliated with this department. Its library of several thousand books, pamphlets and clippings is on the campus and students are invited to make large use thereof. Several scholarships in research work for this bureau, worth from $25 upwards, are open to capable students. University credit will be given for approved work under these scholarships.

Many valuable allied courses in economics, history, jurisprudence, and law are to be had in other departments.

COURSES

11. **Party Government**—Organization and working of political parties in the United States. Growth of party system; the caucus and convention; the direct primary; the party committee "machine" and "boss"; legal control and responsibility of parties; campaign funds; origin and influence of third parties; relation of the "merit system," the initiative, referendum, recall and "short ballot" to party government; party control of legislation and administration. Lectures, readings and reports. Open to juniors, seniors, and students having credit for 1 and 2 or their equivalent. Three hours attendance. Three hours credit. First semester.

Aylsworth

12. **Municipal Government**—Organization and administration of city government in the United States. Growth of cities, municipal home rule, the municipal council and executive, the initiative, referendum and recall, the commission plan and the city manager plan of city government, city planning, taxation and finance, public health, safety and recreation, franchises and public utilities, the municipal ownership problem, etc. Lectures, readings and reports. Open to juniors, seniors and students having credit for 1 and 2 or their equivalent. Three hours attendance. Three hours credit. Second semester. Aylsworth

13. **English Government and Politics**—A study of British political institutions in comparison with our own; the English constitution, the monarchy, the cabinet, the Commons, and the Lords; political parties and party methods; the courts and judicial procedure; local government and administration; the colonial system; present day issues of constitutional reform and social legislation. Lectures, readings and reports. Open to juniors, seniors and students who have taken courses 1 and 2 or their equivalent. Three hours attendance. Three hours credit. First semester.

Aylsworth

14. **Comparative Government**—The national political systems of selected modern states, especially France, Germany and Switzerland. Constitutional beginnings and growth, governmental organization, legislative and administrative methods, the judicial system, present-day political parties and issues. Lectures, readings and reports. Open to juniors, seniors and students having credit for courses 1 and 2 or their equivalent. Three hours attendance. Three hours credit. Second semester.

Aylsworth

[15. **General Sociology**—Principles of social science. For third and fourth year students and graduates. Three hours attendance. Three hours credit. First semester. *Given in 1918-1919.* Howard]

[17. **Problems in Social Psychology and Ethics**—Chief psychic factors in social evolution. Laws of suggestion, mob-mind, and imitation; "craze," "fad," and sect; fashion, conventionality, custom, and tradition; leadership, genius, hero-worship, rôle of great men; social conflict, com-

promise, discussion, free speech, free press, public opinion; social sins, standards of private and social ethics. Theories of Le Bon, Tarde, Sidis, Ward, and Ross. For third year and more advanced students. Two hours attendance. Two hours credit. First semester. *Given in 1918-1919.*
Howard]

19. **Primitive Religion**—An anthropological and sociological investigation, from the comparative standpoint, of the evolution of religious beliefs and rites. The subjects naturally treated in such a course are animism, or notions of the soul, the future life, and the other world, fetishism, idolatry, worship of natural objects, animals, and plants, totemism, ancestor-worship, the cult of the dead and demonism, genesis and development of the idea of God, including polytheism, dualism, and monotheism, magic, together with divination and exorcism, taboo and the ritual of purification, origin and diffusion of myths, sacrifice and prayer, sacred days and festivals, religious mysteries, and priesthoods. Such topics as the classification of religions, connections between religion and morality, factors in the development of religion, etc., receive attention. Lectures accompanied by a reference syllabus. Three hours attendance. Three hours credit. First semester. Webster

20. **Primitive Religion**—19 continued. Second semester.

21. **Immigration**—General causes and conditions controlling migration; history of immigration to the United States and legislation concerning; American policy compared with the policies of other countries; naturalization laws; economic, political, and social effects of immigration to America; social processes and principles involved, as segregation, stratification, assimilation; remedies needed and agencies at work. Open to third year and more advanced students. Two hours attendance. Two hours credit. First semester. Williams

22. **Immigration**—Immigrant groups in the United States; sources; causes and dates of immigration; distribution; conventional attitude of Americans toward; influence on American history and social life; problems peculiar to the various nationalities. Foreign elements in Nebraska; their history and influence upon the state. Open to third year and more advanced students. Two hours attendance. Two hours credit. Second semester. Williams

23. **Socialization of Education**—A discussion of the sociological aspects of education and of the training necessary to prepare the child to meet the social relations of life. Modern movements in the schools looking toward this aim of education including industrial education, vocational guidance, medical inspection, playground movement, vacation schools, and provisions for the care of special classes of pupils. Open to third year and more advanced students. Two hours attendance. Two hours credit. First semester. Williams

24. **Socialization of Religion**—A discussion of the nature and function of religion as an element of the social process, and a comparison of the leading religions as to social content. Demands upon the modern church and its adaptation of architecture and program of activities to meet such; institutional features of church work; social results of missions, especially in foreign lands. Open to third year and more advanced students. Two hours attendance. Two hours credit. Second semester. Williams

[25. **The Family**—The history of matrimonial institutions with a study of some of the more important problems, connected with the family life. Open to third year and more advanced students. Three hours attendance. Three hours credit. First semester. *Given in 1918-1919.* Howard]

27. **Parliamentary Law and Practice**—Designed to give students training in the rules and practices of deliberative bodies. Open to juniors, seniors and those having taken courses 1 and 2. Three or four hours attendance. Two hours credit. First semester. ———

29. **Government of Nebraska**—A study of the organization and administration of state and local government; political and constitutional development; the legislature and legislation; the judicial system and judicial administration; governor and administrative system; institutional administration; local, county, and municipal government. Lectures, readings, reports. Open to second year and more advanced students. Three hours attendance. Three hours credit. First semester.

Aylsworth

30. **County and Township Government**—A general study of the origin and development of local government and administration in the United States, followed by a special study of the organization, actual workings, and present problems of county and township government in Nebraska. Open to juniors, seniors and those having taken courses 1 and 2. May be made a three hour course by arrangement. Two hours attendance. Two hours credit. Second semester. ———

31. **State and Local Administration**—A study of administrative organization and activities in the different states; the governor and other state administrative officers; administrative significance of the short ballot, the departments of education, health, insurance, public lands, etc.; growth and influence of state boards and commissions; state civil service reform; centralization in state administration; state control of county, township, and municipal administration. Open to juniors, seniors and to students having taken courses 1 and 2 or their equivalent. Two hours attendance. Two hours credit. First semester. Alysworth

32. **Judicial Administration**—A study of our American judiciary, the system of courts, federal and state, their organization and jurisdiction, unique position in the political system, movements to curb power and increase the responsibility of the judiciary, methods of procedure, civil and criminal, the jury system, defects and suggested reforms in judicial organ-

ization and administration. Open to juniors, seniors and students having taken courses 1 and 2 or their equivalent. May be made a three hour course. Two hours attendance. Two hours credit. Second semester.

Aylsworth

33. **Practical Legislation: Nebraska Problems**—Introductory study of Nebraska's historical development, social, political, constitutional. Present problems in Nebraska law-making and administration. Subject-matter and methods of legislation. Drafting and criticism of legislative bills and information briefs in co-operation with Nebraska Legislative Reference Department. Practice work at state house during legislative session, January to April of odd numbered years. Two hours attendance. Two hours credit. First semester. Credited in the College of Law.

Sheldon

34. **Practical Legislation: Nebraska Problems**—33 continued. Second semester.

33a. **Seminar on Nebraska History, Politics and Economics**—Combined research seminar of the departments of American History and Political Science and Sociology. General subject for 1917-1918 will be the earlier periods of Nebraska; special assignments may be made upon any phase of Nebraska's development if desirable and convenient. Open to advanced undergraduates on consultation with instructors, and to graduates. Two hours attendance. Two hours credit. May be registered for in either of the two departments. Given every year. First semester.

Caldwell, Sheldon

34a. **Seminar on Nebraska History, Politics and Economics**—33a continued. Second semester.

35. **Folklore**—An examination of those systems of belief and conduct, which, inherited from prehistoric and primitive culture, have survived into modern civilization. After preliminary lectures on the study and classification of folklore, the subject is discussed under the following heads: 1. Folk-faith: Animism; magic; myth. 2. Folk-literature: Folk-tales, their origin, diffusion, and interpretation; fables; folk-songs, including ballads and children's rhymes; folk-epics, notably those of Celtic and Teutonic peoples; folk-plays, including mimes, mummers' plays, and mystery plays; folk-sayings, including proverbs and riddles. 3. Folk-custom: Ceremonial forms and observances; rules of politeness and salutations; birth, puberty, marriage, and death rites; popular festivals, especially the festivals of the Christian year; children's games; games of chance. 4. Folk-superstition: Folk-medicine; sacred numbers; symbols; lucky and unlucky days; animal lore and plant lore. These several topics are treated with special reference to the beginnings of religion, law, and morality. The course should prove of special importance to teachers and to others interested in the study of childhood. Lectures accompanied by a reference syllabus. Two hours attendance. Two hours credit. First semester.

Webster

36. **Folklore**—35 continued. Second semester.

[37. **Principles of Political Science**—The scope and methods of political science, the nature and origin of the state, forms of state and government, sovereignty, functions of the state, citizenship and nationality, modern principles of representation, suffrage, and governmental organization. Open to seniors and graduates. Two hours attendance. Two hours credit. First semester. *Not given in 1917-1918.* Aylsworth]

[38. **History of Political Theories**—The development of ancient medieval and modern political thought in its relation to political history; political theories of Aristotle, Aquinas, Machiavelli, Bodin, Grotius, Hooker, Hobbes, Locke, Montesquieu, Rousseau, Burke and others. Open to seniors and graduates. Two hours attendance. Two hours credit. Second semester. *Not given in 1917-1918.* Aylsworth]

39. **Training Course for Social Service**—The aim of this course is to direct those desiring to enter some field of social service—both in their choice of work, if undecided, and in their preparation. In addition to instruction in methods of investigation and the use of statistical material, the laboratory method will be employed in so far as practicable; and when desired, various opportunities for social service will be provided students in their particular fields, under the direction of the instructor. Open to seniors and graduates. Two hours attendance. Two hours credit. First semester. Williams

40. **Training Course for Social Service**—39 continued. Second semester.

41. **Theory and Practice of Legislation**—A study of the structure, organization, and methods of procedure of legislative bodies, and the drafting of legislative bills. Open only to juniors, seniors or those having taken courses 1 and 2, except by special consent. May be made a three hour course by arrangement. Two hours attendance. Two hours credit. First semester.

42. **Theory and Practice of Legislation**—41 continued. Second semester.

43. **Readings in Political Science**—With the advice and consent of the Department, special reading courses in Political Science may be arranged to meet the special needs of undergraduate or graduate students. Credit according to work done. First semester. Aylsworth

44. **Readings in Political Science**—43 continued. Second semester.

47. **Seminar on American Politics and Government**—The subject of investigation will vary from year to year. For 1917-1918 the general subject will be that of State Administration in its different phases and with special reference to Nebraska. Primarily for graduates, but by consent other specially qualified students may be admitted. One two-hour (evening) session each week. Two hours credit. First semester. Aylsworth

48. **Seminar on American Politics and Government**—47 continued Second semester.

[49. **Seminar on the Family**—Mother-right, father-right, polygyny, polyandry, wife-capture, wife-purchase, theories as to genesis of matrimonial institutions; divorce, marriage, birth-rate, "race-suicide," legislation and sex-education in the reform movement; intellectual and industrial liberation of women; co-education; problems of marriage, the home, and the family. Primarily for graduates. By consent a limited number of other specially qualified students may be admitted. One two-hour (evening) session each week. Two hours credit. Second semester. *Given in 1918-1919.* Howard]

53. **Research Course in Social Anthropology**—Students who desire to undertake special investigations in the field of social anthropology will be guided in the selection of subjects, the use of the appropriate literature, and the preparation of their researches in shape for publication. The University Library contains sets of all the important periodicals devoted to anthropology, as well as a good collection of works of travel and other source material. This course is limited in numbers, and intending students, before registration, should first consult the instructor in charge. One hour a week for conference. One hour credit. First semester. Webster

54. **Research Course in Social Anthropology**—53 continued. Second semester.

RHETORIC

Professor Frye (*Head of Department*), Professor Fogg, Professor Buck, Associate Professor Gass, Assistant Professor McPhee, Assistant Professor Davis, Instructor Babbitt, Assistant Instructor Wimberly

COURSES

7. **English Composition**—Advanced course. Theory of English composition. Studies in the organization of literary material. Daily and fortnightly themes. Two hours attendance. Three hours credit. First semester. Frye

8. **English Composition**—7 continued. Critical studies in style and structure. Readings and reports to illustrate the principles of English prose literature. Daily and fortnightly themes. Two hours attendance. Three hours credit. Second semester. Frye

9. **Writers' Course**—Intended for advanced students who wish to improve their writing in connection with some particular subject of study or inquiry. No classes; themes, criticism and conferences. The student is expected to propose a subject, to prepare a theme, and to submit it to the instructor for criticism and advice with a view to revision and improvement. Two hours credit. First semester. Frye

10. **Writers' Course**—9 continued. Second semester.

11. **The History of Rhetoric**—A reading course in the history of rhetorical theory. Two hours attendance. Two hours credit. First semester. Gass

13. **Argumentative Composition**—Practical application of the principles of argumentation-analysis, evidence, structure (brief-drawing) the rhetoric of argument. The course centers in convincingness of matter and in precision and lucidity of statement. Lectures, briefs and arguments on questions of general or college interest or from the students' work in other departments. Two hours attendance. Three hours credit. First semester. Fogg and Assistants

14. **Argumentative Composition**—13 continued. While continuing drill in conviction, this course supplements 13 by stressing persuasion—adaptation of material to specific conditions—and vigor and ease of statement. Ethics of discussion. Lectures, readings, briefs and arguments. A thesis, for which 13 is direct preparation, may be substituted for shorter arguments. Two hours attendance. Three hours credit.
Fogg and Assistants

15. **Debate**—Principles of convincing and persuasive argumentative composition applied under the conditions of oral discussion. Lectures on rhetorical style for oral presentation; debates, preceded by briefs and criticised before the class, on economic, historical, political and sociological questions. Open to those who have completed 13 and to others by consent of the instructor. Membership limited to twenty. Two consecutive hours attendance. Three hours credit. First semester. Fogg

16. **Debate**—15 continued. Open to those who have completed 13 or 15 and to others by consent of the instructor. Second semester.

[17. **Debate**—Further study of evidence and of structure and style in forensic discourse. Analysis of certain English and American political debates. Debates preceded by briefs and conferences. Open to those who have completed 15 and 16 and to others by consent of the instructor. Membership limited to sixteen. Two hours attendance. Three hours credit. First semester. *Not given in 1917-1918.* Fogg]

[18. **Debate**—17 continued. Second semester. *Not given in 1917-1918.*]

[19. **Composition of the Public Address**—Training in the composition of the public address not strictly argumentative—chiefly forms of the occasional address. Persuasion and literary style. Study of work of Lincoln, Phillips, Curtis, and certain contemporary public speakers. Two hours attendance. Three hours credit. First semester. *Not given in 1917-1918.* Fogg]

[20. **Composition of the Public Address**—19 continued. Second semester. *Not given in 1917-1918.*]

22. **Argumentation and Debate Seminary**—An intensive study in connection with the investigation of a question of current public interest, of analysis, testimonial evidence, the kinds of arguments and fallacies, brief-drawing, rebuttal, the rhetorical principles governing effective written and oral statement. Use of books of reference; the gathering and classifying of material; round table discussion of members' reports. Admission by competitive appointment. Membership limited to sixteen. Two or three hours credit. First semester. Fogg

29. **The Nineteenth Century Essay**—Principles of English composition as illustrated by selected works of masters of modern English prose—Jeffrey, Hazlitt, Macaulay, Lamb, DeQuincy, Carlyle, Ruskin, Arnold, Newman, and Stevenson. Frequent themes; personal criticism. Prerequisite: Courses 1, 2. Two hours attendance. Two hours credit. First semester. Fogg

30. **The Nineteenth Century Essay**—29 continued. Second semester.

32. **The Teaching of Rhetoric and English Composition**—Teachers' Course. Aims and methods of secondary-school instruction in rhetoric and English composition. General principles of composition. Discussion of text-books; themes. The management of theme courses. Practice in correcting themes. Open to juniors, seniors, and graduates. One hour lecture; three hours reading and observation. Two hours credit. Second semester. Frye, Fogg

33. **Comparative Criticism**—A comparative study of the leading social ideas in the works of representative writers in France, Germany, and England during the latter eighteenth and early nineteenth century. Frequent reports and conferences. Intended to give the student some notion of the social ideas in literature as a foundation for its critical appreciation. A reading knowledge of French is indispensable. Admission by consent of the instructor. Two hours lectures. Two hours credit. Buck

33a. **Comparative Criticism**—A comparative study of the leading ideas in the work of representative authors of today in America, England, France and Germany, with the criticism of certain general tendencies, such as naturalism, symbolism, etc. Mainly a reading course, controlled by reports, critiques, and lectures. Two hours attendance. Two hours credit. Buck

34. **Comparative Criticism**—A comparative study of the drama—Greek, Spanish, French, and English. Mainly a reading course, controlled by reports, critiques, and lectures. Intended to give the students some sort of foundation for the critical appreciation of literature. A reading knowledge of French is indispensable. Admission by consent of the instructor. Two hours attendance. Three hours credit. Frye

ROMAN HISTORY AND LITERATURE

Professor Barber (*Head of Department*), Associate Professor Sanford, Assistant Professor Hunter

MASTER OF ARTS

Candidates for advanced degrees must have completed courses 9, 10, 11, and 12, or their equivalents. Graduate study should include courses 17, 18, 19, 23, and 24, after which subjects may be selected from any courses open to graduates. The basis of requirement is as follows:

Second Minor: Three hours of classroom work for one year.

First Minor: Six hours of classroom work for one year.

Major: Six hours of classroom work and the equivalent of four hours in the preparation of a thesis.

Complete Course: Nine hours of classroom work and the equivalent of six hours in the preparation of a thesis.

Theses may be prepared on any of the following subjects: The satirists, the Roman drama, Roman history, Roman oratory, elegiac poetry, poetry of the empire, prose of the republic, prose of the empire, sermo, plebeius, patristic literature. By special arrangement a thesis may be prepared on some question of syntax covering the whole literature.

COURSES

17. **Suetonius**—Lives of Julius and Augustus Caesar. Sight reading. Talks upon Roman life. Papers by the class. Two hours attendance. Two hours credit. First semester. Barber

18. **Pliny and Juvenal**—Selected letters. Selected satires. Reading from hearing. Collateral readings on Roman social life. Two hours attendance. Two hours credit. Second semester. Barber

20. **Roman Law**—Reading of selections from the public and private law of the Romans. Lectures on the origin, development and principles of Roman law. Two hours attendance. Two hours credit. Second semester. Barber

21. **Cicero's Letters**—Selections arranged to throw light upon life and time of Cicero. Two hours attendance. Two hours credit. First semester. Sanford

22. **Cicero**—Tusculan Disputations. Book I is studied with reference to Roman ideas of immortality. Selections from Lucretius, Seneca, and Buecheler's Carmina Latina Epigraphica. Two hours attendance. Two hours credit. Second semester. Sanford

23. **Composition**—A brief, illustrated review of the syntax of noun and verb, followed by practice in connected Latin writing. One hour attendance. One hour credit. First semester. Sanford

24. **Composition**—23 continued. Second semester.

25. **Latin Grammar**—An elementary course in historical development of Latin moods. Tenses. Pronunciation. Lectures. One hour attendance. One hour credit. First semester. Barber

26. **Latin Grammar**—25 continued. Second semester.

31. **Lucretius**—Books I and III, with an examination in modal uses of the remaining books. Two hours attendance. Two hours credit. First semester. Barber

32. **Cicero—de Oratore**—Book I, with an examination into modal uses in Cicero's essay. Two hours attendance. Two hours credit. Second semester. Barber

ROMANCE LANGUAGES AND LITERATURES

Professor Conklin (*Head of Department*), Associate Professor Reese, Instructors Hanley, Maynard, Clifford, Thomes; Assistants Taylor, Apperson

For graduate study in Romance language at least three years of French are necessary. For the courses in the following groups equivalents are accepted:

Philological Group—Second Minor: Old French, historical French grammar, Italian, or Spanish. First Minor: Requirements for second minor and further study of Old French and of Italian or Spanish. Major: Old French, historical French grammar, Italian and Spanish, advanced course in either Italian or Spanish, Romance phonetics.

Literary Group—Second Minor: Studies of different periods in French literature, Italian or Spanish and Old French. First Minor: Studies of different periods in French literature, Italian and Spanish, or advanced course in Italian or Spanish and Old French. Major: French writing and speaking; studies of different periods in French literature; Italian and Spanish, advanced course in either Italian or Spanish; Old French, historical French grammar, special readings.

COURSES

French

15. **Studies of Different Periods in French Literature**—Prerequisite: Courses 7, 8, 9, 10, or equivalent work. Two hours attendance. Two hours credit. First semester. Conklin, Reese

16. **Studies of Different Periods in French Literature**—15 continued. Second semester.

17. **French Literature**—16 continued. First semester.

18. **French Literature**—17 continued. Second semester.

Italian

41. **Beginning Italian**—Introductory course. Three hours attendance. Three hours credit. First semester. Hanley

42. **Italian**—41 continued. Second semester.

43. **Italian**—Second year course. Two hours attendance. Two hours credit. First semester. Hanley

44. **Italian**—43 continued. Second semester.

French

51. **Old French**—Grammar and reading. Two hours attendance. Two hours credit. First semester. Conklin

52. **Old French**—51 continued. Second semester.

55. **French Philology** Historical French grammar, phonetical analysis of French words. One hour attendance. One hour credit. First semester. Conklin

56. **French Philology**—55 continued. Second semester.

Romance Phonetics

65. **Comparative Phonetics of Italian, Spanish, French and Provençal**—One hour attendance. One hour credit. First semester. Conklin

66. **Comparative Phonetics of Italian, Spanish, French and Provençal**—65 continued. Second semester.

SANSKRIT AND COMPARATIVE PHILOLOGY

See (Greek History and Literature.")

ZOOLOGY

Professor Wolcott (*Head of Department*), Professor Barker, Professor Whitney, Associate Professor Latimer

Before entering upon graduate work in zoology, and, before offering himself as a candidate, the student must consult with the head of the department as to the details of his course, even tho his work may actually be done under the immediate direction of another member of the staff.

Among the facilities available for research work are a large collection of mites, a comparatively unworked group of great economic and scientific importance; a considerable and rapidly growing collection of parasitological material; and an aquarium room with permanent colonies of protozoa and a number of the lower invertebrates under various environmental conditions, which permits of experimental work upon these forms.

The publications of the departmental staff and of graduate students are included in a series entitled "Studies from the Zoological Laboratory," of which five volumes of twenty numbers each have been completed, while of volume 6 numbers 101 to 115 have been published, and others are in press and in preparation.

The department has available a limited number of fellowships and scholarships which are given to deserving students each year. Applicants can secure full information in regard to them by addressing the head of the department.

MASTER OF ARTS

To register as a candidate for the degree of Master of Arts, a student must have completed two years of undergraduate work in zoology, and one in botany. The ordinary requirements are as follows:

Minor: An amount of advanced work equivalent to six credit hours, a minor thesis, and seminar work for one semester.

Major: An amount of advanced work equivalent to 12 credit hours, a major thesis, and assigned reading, including seminar work thruout the year.

Complete course: Work equivalent to full time for one year including reading and seminar work, and an acceptable thesis.

DOCTOR OF PHILOSOPHY

The preparation required of the student is the same as for the Master's degree. The requirements are:

Minor: An amount of work approximating that of the complete course for the degree of Master of Arts.

Major: A course of graduate study which shall meet at least the minimum time requirement imposed by the Graduate College; the preparation of a thesis which shall represent original research, and three years of seminar work.

COURSES

31. **Organic Evolution**—A general study of the development of the theory of Organic Evolution from the time of the ancient Greeks to the present day together with a study of the evidences that support the theory and also of the methods by which it has operated. It is desirable that a student should have had two years work in zoology before electing this course altho it may be taken by those who have had only a year's work in zoology with the consent of the instructor. Lectures and assigned readings. Two hours attendance. Two hours credit. First semester. Whitney

32. **Genetics**—A study of the recent genetic theories, and their practical bearing on the rearing and improvement of plants, animals, and man. Breeding experiments with flies, mice, and guinea pigs will be carried on in the laboratory to demonstrate the main principles involved in these theories. It is desirable that a student should have had two years' work in zoology before electing this course altho it may be taken by those who have had only a year's work in zoology with the consent of the instructor. Two hours attendance. Four hours laboratory. Three hours credit. Second semester. Whitney

33. **Advanced Work in Animal Morphology**—Devoted to the study of some assigned problem in morphology. Laboratory work with conferences and reading. May be elected as a five to ten-hour study. First or second semester. Elected only after consultation with instructor.
Wolcott, Barker, Latimer

34. **Animal Parasites**—Taxonomy, morphology, biology and economic relationship of animal parasites. Lectures, laboratory and field work. The handling of a simple assigned problem usually on some undescribed species. Two hours attendance. Four to twelve hours laboratory. May be elected as a two to five-hour course. First or second semester. Open to students who have had courses 3, 4, and 25 or their equivalent.

Barker

35. **Experimental Zoology**—A general study of the recent results obtained in the field of experimental zoology together with demonstrations and experiments. Open to students who have had the second year's work in zoology. One hour attendance. Four hours laboratory. Two hours credit. First semester. Whitney

37. **Advanced Work on Local Fauna**—A course in ecology and systematic zoology devoted to the study of some problem connected with the distribution within the state of a certain group of animals, or with the fauna of a certain habitat. The aquarium room offers facilities for keeping material thruout the winter. Field and laboratory work with conferences and assigned readings. May be elected as a three to ten-hour course. First or second semester. Wolcott

39. **Methods in Teaching Zoology**—A course for high school teachers, including a discussion of the methods of presenting the subject, of the choice of books, and of the collection and handling of laboratory materials. Two hours lecture and conference with other assigned work. Two hours credit. First semester. Wolcott

41. **Seminar**—A review of some recent book based on original research, with a study of the literature of the subject presented. The book chosen for 1916-1917 was Holmes' *The Evolution of Animal Intelligence.* Open to election by advanced students, and required of candidates for advanced degrees, of whom are required reports on assigned readings. One hour attendance. One hour credit. May be elected more than once. First or second semester. The Staff

43. **Research**—The equipment of the department and the library facilities are such that research along certain lines indicated below is being carried on. An extensive Salt Basin, including a salt lake over a mile in extent and alkali flats with numerous ponds, all within a few minutes' walk of the campus, offer noteworthy opportunities for certain types of investigation. This course can be elected only by those registered in the Graduate College.

a. Morphology of the mites. Ecological studies and investigation on the local fauna. Wolcott

c. Morphology of the parasitic protozoa and worms. Barker

d. Problems in heredity and sex-determination. Whitney

e. Morphology of the vertebrate nervous system. Latimer

GRADUATE STUDENTS IN 1916-1917

Candidates for the Degree of Doctor of Philosophy

Andersen, Emma Nathalie.....Lincoln
A. B. 1910, A. M. 1913, The University of Nebraska
Botany

Bengtson, Nels August.....Lincoln
A. B. 1907, A. M. 1908, The University of Nebraska
Geography, Geology

Bradbury, Ora Clare.....Lincoln
B. Sc. 1914, Ottawa University; A. M. 1915, The University of Nebraska
Zoology, Botany

Burrage, Dwight Grafton.....Lincoln
A. B. 1897, A. M. 1899, Amherst College
Greek, Latin, Sanskrit

Clark, Letta May.....University Place
A. B. 1905, Nebraska Wesleyan University; A. M. 1913, The University of Nebraska
English Language and Literature

Crago, Alfred.....Lincoln
A. B. 1905, A. M. 1916, The University of Nebraska
Education, Philosophy, Political Science

Fitzpatrick, Thomas J.....Bethany
B. Sc. 1893, M. Sc. 1895, Iowa State College
Botany

Fulk, Joseph Richard.....Lincoln
A. B. 1903, A. M. 1912, The University of Nebraska; A. M. 1915, Columbia University
Education, Philosophy, Political Science and Sociology

Gish, Edna Miller.....Lincoln
B. Sc. 1913, A. M. 1915, The University of Nebraska
Chemistry, Physics, Mathematics

Jenkins, Thomas Nicholas.....Neligh
A. B. 1915, A. M. 1916, The University of Nebraska
Philosophy, Physics

Klotsche, Ernst Heinrich.....Lincoln
Certificate 1899, Leipsig Gymnasium; A. M. 1916, The University of Nebraska
Greek, Sanskrit

Lacey, Herbert Camden.....College View
A. B. 1893, Battle Creek; A. M. 1915, Union College; A. M. 1916, The University of Nebraska
Greek, Latin, Sanskrit

Lewis, Garland Edison.....Lincoln
B. Sc. 1909, Grand Island College; A. M. 1913, The University of Nebraska
Chemistry, Physics, Pharmacy

Munson, Grace Esther.....Lincoln
A. B. 1911, The University of Nebraska; A. M. 1912, Wellesley College
Education, Philosophy

Noll, William Clarence.....Toledo, Iowa
A. B. 1911, York College; A. M. 1915, The University of Nebraska
Zoology

Perusse, Francis Joseph.....Lincoln
B. Sc. 1914, The University of Nebraska
Chemistry, Geology, Pharmacology

Reinsch, Frank Herman ..... Lincoln
A. B. 1909, A. M. 1912, The University of Nebraska
English Language and Literature

Rowell, Eugene Clark ..... College View
A. B. 1910, Union College; A. M. 1916, The University of Nebraska
English Language and Literature

Runge, Lulu Lillian ..... Lincoln
A. B. 1905, A. M. 1909, The University of Wisconsin
Mathematics, Education

Sowell, James William ..... Omaha
A. B. 1900, The University of Nebraska; A. M. 1903, Gallaudet College
English Language and Literature

Thompson, Harry Landis ..... Lincoln
B. Sc. 1912, A. M. 1914, The University of Nebraska
Pharmacy, Pharmacology

Ward, Nellie Marguerite ..... Lincoln
B. Sc. 1913, A. M. 1915, The University of Nebraska
Physics

Warden, Carl John ..... Lincoln
A. B. 1915, Cotner University; A. M. 1916, The University of Nebraska
Philosophy, Education, Zoology

Wooster, Margaret ..... Silver Creek
A. B. 1913, A. M. 1915, The University of Nebraska
Philosophy, Germanics, English Language and Literature

Candidates for the Degree of Master of Arts

Abbott, Hattie Belle ..... Downs, Kansas
A. B. 1916, Union College
English Language and Literature

Abbott, Roscoe Conklin ..... Wood River
B. Sc. 1910, The University of Nebraska
Chemistry

Adams, Frank Flanders ..... Lincoln
B. E. 1913, Peru State Normal
Education, Philosophy, Biology

Alden, Charles Niles ..... Ceresco
A. B. 1908, The University of Nebraska
Latin

Allen, Helen Eulalia ..... Auburn
A. B. 1915, Bellevue College
English Language and Literature, Education

Alexander, Mary Charlotte ..... Lincoln
A. B. 1901, The University of Nebraska
English Language and Literature

Almy, Emory Frederick ..... Greenwood
B. Sc. 1916, The University of Nebraska
Agricultural Chemistry

Anderson, Alberta Beck ..... Lincoln
A. B. 1909, The University of Nebraska
Political Science and Sociology, Philosophy

Anderson, Esther Sanfrieda.....Lincoln
B. Sc. 1915, The University of Nebraska
Geography

Anderson, Mary Annette.....Lincoln
A. B. 1915, The University of Nebraska
English Language and Literature, Education

Andrews, Gordon George.....College View
A. B. 1912, Union College
European History

Apperson, Catherine LaMaster.....Lincoln
A. B. 1915, The University of Nebraska
Romance Languages

Armstrong, Amy Eleanor.....Syracuse
A. B. 1914, The University of Nebraska
Philosophy, English Language and Literature

Ash, Irvin Oda.....Middlebourne, West Virginia
A. B. 1914, University of West Virginia
Education

Ask, Mihran Nicholas.....Lincoln
A. B. 1916, Union College
Philosophy

Aygarn, Edwin.....Elkhorn
A. B. 1913, University of Minnesota
American History, Political Science

Babbitt, Bethel Jay.....Houghton, New York
A. B. 1916, Oberlin College
Physics

Baker, Edyth Estelle.....Lincoln
A. B. 1908, The University of Nebraska
Botany

Beyer, Eric Alexander.....Atchison, Kansas
A. B. 1916, Midland College
Germanics

Beynon, Abi Elizabeth.....Lincoln
A. B. 1917, The University of Nebraska
Political Science and Sociology

Bigelow, Clarence Ray.....Harrison
A. B. 1917, The University of Nebraska
American History

Biggelstone, Ruth Rieke.....Lincoln
A. B. 1914, Morningside College
English Language and Literature, Education

Bishop, Frank Edward.....University Place
A. B. 1916, Nebraska Wesleyan University
Agronomy

Blackstone, Elmer Orton.....Lincoln
A. B. 1917, The University of Nebraska
Political Science and Sociology

Bowers, Charles Arthur.....York
A. B. 1913, York College
Education

Bradford, Harry Elwyn ..... Lincoln
A. B. 1904, The University of Nebraska
Education, Animal Husbandry

Briggs, Lena ..... Kearney
A. B. 1914, The University of Nebraska
European History

Brock, Lucile Elizabeth ..... Bethany
A. B. 1913, Cotner University
English Language and Literature

Brower, Mary Letitia ..... Fullerton
A. B. 190,8 The University of Nebraska
European History

Brown, Edna May ..... Lincoln
A. B. 1914, The University of Nebraska
Education

Burgess, Edith ..... Bethany
A. B. 1913, Cotner University
English Language and Literature, Education

Burnham, Archer Lowell ..... Stanton
A. B. 1916, The University of Nebraska
Political Science and Sociology, Education

Calvin, John Willard ..... Lincoln
B. Sc. 1906, Kansas Agricultural College
Agricultural Chemistry

Cameron, Janet Grey ..... Lincoln
A. B. 1911, The University of Nebraska
American History

Cannell, Katherine ..... Lincoln
A. B. 1913, The University of Nebraska
Germanics

Carey, Raymond Burdette ..... Fairbury
A. B. 1913, Nebraska Wesleyan University
English Language and Literature, Education

Carlson, Knute Emil ..... Wahoo
A. B. 1915, The University of Nebraska
Political Science and Sociology, American History

Christensen, Arthur Charles ..... College View
A. B. 1913, Union College
Chemistry

Clark, Grace Maria ..... Lincoln
A. B. 1907, The University of Nebraska
Education

Collett, Clinton Ellsworth ..... Gothenburg
A. B. 1908, Nebraska Wesleyan University
Geography

Cook, Warren Sanford ..... Lincoln
A. B. 1916, The University of Nebraska
Education, Philosophy

Cooper, John Ralph ..... Lincoln
B. Sc. 1912, Kansas Agricultural College
Horticulture

Cowan, Ralph Ellis.....Lincoln
A. B. 1912, Oberlin College
Zoology

Craft, Magdalene.....Tecumseh
A. B. 1916, The University of Nebraska
Germanics, Political Science and Sociology

Cummins, Mildred Louise.....Lincoln
A. B. 1915, The University of Nebraska
English Language and Literature, Education

Damsgard, Lincoln Clarence.....College View
A. B. 1913, Union College
Physics

Denny, Glaideth Gainevere.....Lincoln
A. B. 1908, The University of Nebraska
Germanics

Dilworth, Cora Williams.....Lincoln
A. B. 1916, The University of Nebraska
Romance Languages, Education

Drake, Robert James.....Lincoln
A. B. 1914, The University of Nebraska
American History

Dry, Lawrence.....Lincoln
A. B. 1915, Cotner University
Political Science and Sociology

Everett, Earl Alexander.....Mullen
A. B. 1916, Grand Island College
Political Science and Sociology

Faulhaber, Marie Helen.....Lincoln
A. B. 1915, Nebraska Wesleyan University
Education, Philosophy

Finley, Ethan Clyde.....Omaha
A. B. 1901, The University of Nebraska
American History

Fleming, William.....Ansley
A. B. 1914, Grand Island College
Political Science, American History

Forsyth, Gladys McCue.....College View
A. B. 1916, Leland Stanford University
Mathematics, Education

Foster, Bess.....Sterling
A. B. 1914, The University of Nebraska
English Language and Literature, Education

Frum, Mary Alice.....Shelby, Iowa
A. B. 1910, The University of Nebraska
American History, Education

Fulton, Arturo Joseph.....Whitman
B. Sc. 1898, Union College
Political Science, Education

Gaddis, Porter Lemuel.....Lincoln
A. B. 1908, Greenville College; B. Sc. 1916, The University of Nebraska
Agronomy, Farm Management

Graham, William Wayne ..... Julian
A. B. 1906, York College
Education

Gray, Viola Clarke ..... Lincoln
A. B. 1902, The University of Nebraska
English Literature

Green, Katherine Mills ..... Lincoln
A. B. 1906, The University of Nebraska
Political Science and Sociology

Green, Lucy Garrison ..... Lincoln
A. B. 1898, The University of Nebraska
English Language and Literature, American History

Griesel, August George ..... Lake Norden, South Dakota
B. Ph. 1914, Sioux Falls College
American History, Education

Haag, Grace Clarabelle ..... Clay Center
A. B. 1915, The University of Nebraska
English Language and Literature, Education

Hayes, Fred Elmer ..... Stanton
A. B. 1908, The University of Nebraska
American History

Hibben, Robert Cann ..... Lincoln
B. Sc. 1916, Iowa State College
Dairy Husbandry

Hiller, William John ..... Lincoln
A. B. 1915, University of Michigan
Economics

Himes, Minnie Grimstead ..... Bethany
A. B. 1917, Cotner University
English Language and Literature, Political Science and Sociology

Hooton, Mary Belle ..... Lincoln
A. B. 1913, The University of Nebraska
English Language and Literature, Education

Houston, Sallie Davis ..... Sheldon, Missouri
A. B. 1902, Cottey College
English Language and Literature

Hudson, Roy William ..... Hayes Center
A. B. 1916, Nebraska Wesleyan University
Physics

Hughes, Gwendolyn ..... Lincoln
A. B. 1916, The University of Nebraska
Political Science and Sociology

Hunter, Myrtle Elizabeth ..... Lebanon
Ph. B. 1909, Bellevue College
Latin

Jean, Frank Covert ..... Lincoln
A. B. 1911, The University of Nebraska
Botany, Education

Johnson, Nora Olive ..... Bussey, Iowa
A. B. 1913, Drake University
Germanics

Johnson, Tressa Beatrice.....College View
A. B. 1916, The University of Nebraska
Philosophy

Jones, Olive Mildred.....Hastings
A. B. 1911, The University of Nebraska
Philosophy, Education

Kano, Hisanori.....Tokio, Japan
A. B. 1916, Tokio Imperial University
Farm Management

Kellogg, Charles Edward.....Red Cloud
A. B. 1912, Doane College
Animal Husbandry, Farm Management

Kidd, Clifford Manzer.....Kenesaw
A. B. 1914, Nebraska Wesleyan University
Economics

Kuhn, Ada Ruth.....Lincoln
A. B. 1915, The University of Nebraska
Political Science and Sociology

Kuns, David Raymond.....Humboldt
A. B. 1912, York College
Education

Lackey, Earl Emmett.....Wayne
A. B. 1911, The University of Nebraska
Geography

Lathrop, Edith Anna.....Lincoln
A. B. 1903, The University of Nebraska
Education, Philosophy

Lee, Yong Kiu.....Lincoln
B. Sc. 1916, The University of Nebraska
Chemistry

Lefler, Millard Charles.....Peru
B. E. 1911, Peru State Normal
Education

Lind, Johannes Victor.....Wahoo
A. B. 1912, Augustana College
Philosophy

Littler, Keitha.....Missouri Valley, Iowa
A. B. 1913, Grinnell College
English Language and Literature, Education

Lively, Charles Elson.....Lushton
A. B. 1917, The University of Nebraska
Political Science and Sociology, Education

Lynch, Lindon Lamar.....Lincoln
B. Sc. 1915, The University of Nebraska
Chemistry

McClintock, Mabel.....Bethany
A. B. 1913, Cotner University
English Language and Literature

McGee, Ruby Dell.....College View
A. B. 1913, Union College
Education

McKelvie, Estelle ..... Red Cloud
A. B. 1913, University of Minnesota
English Language and Literature

Magnuson, Harry Peter ..... Gothenburg
B. Sc. 1916, The University of Nebraska
Agricultural Chemistry, Botany

Mandalian, Jacob Garabet ..... College View
A. B. 1916, Union College
European History, English Language and Literature

Mapes, Charles Boyd ..... Peru
B. E. 1917, Peru State Normal
Education, Philosophy, Political Science and Sociology

Marrs, Ralph Merton ..... Bayard
A. B. 1917, The University of Nebraska
Political Science and Sociology

Mathewson, Louise ..... Lincoln
A. B. 1915, The University of Nebraska
Philosophy

Mickle, Guy Ellsworth ..... Crete
A. B. 1913, Doane College
Chemistry

Moyer, Torrence Calvin ..... Lincoln
A. B. 1911, M. D. 1914, The University of Nebraska
Zoology

Naber, Gerhard John ..... Waco
A. B. 1917, The University of Nebraska
Germanics

Noble, Homer Adelbert ..... Lincoln
B. Sc. 1916, The University of Nebraska
Botany, Geography

Parminter, Hugh Ernest ..... Elmwood
A. B. 1911, Cotner University
Education

Partridge, Edwin Maynard ..... Omaha
B. Sc. 1916, The University of Nebraska
Chemistry

Power, Marchelle Harnly ..... Lincoln
A. B. 1917, The University of Nebraska
Chemistry

Premer, Chancy Lloyd ..... College View
A. B. 1915, Union College
European History

Price, Ruth Amelia ..... Lincoln
A. B. 1909, The University of Nebraska
Education

Rabak, William ..... Lincoln
B. Sc. 1915, University of Wisconsin
Agricultural Chemistry

Raub, Leo Gerrard ..... Oleon, New York
A. B. 1916, Oberlin College
Physics

Reason, Arthur Wesley.....Omaha
A. B. 1913, Howard University
Political Science and Sociology, Education

Reed, Isa Dolores.....Lincoln
A. B. 1911, The University of Nebraska
Philosophy

Reed, Merrill Virgil.....Lincoln
A. B. 1914, The University of Nebraska
Botany

Reynoldson, Addie.....St. Edward
A. B. 1904, The University of Nebraska
American History, Education

Rice, Louise Bessey.....Sioux Falls, South Dakota
A. B. 1914, The University of Nebraska
English Language and Literature

Rhoden, Beulah Richard Harold.....Lincoln
A. B. 1916, The University of Nebraska
Zoology, Chemistry

Rigdon, Harry Pryor.....Fairbury
B. Sc. 1916, The University of Nebraska
Botany

Rolofson, Pearl.....Lincoln
A. B. 1914, The University of Nebraska
Political Science and Sociology, German

Rough, Emily Violet.....Weeping Water
A. B. 1913, Nebraska Wesleyan University
English Language and Literature

Ruby, Glen Mathew.....Lincoln
B. Sc. 1916, The University of Nebraska
Geology

Schade, Arthur Lawrence.....Lincoln
A. B. 1916, The University of Nebraska
Economics

Severin, Richard Otto.....Lincoln
A. B. 1911, The University of Nebraska
Education

Shanek, Bertha.....Odell
A. B. 1912, The University of Nebraska
Slavonic

Showalter, Donald Fox.....Davenport
A. B. 1916, The University of Nebraska
Philosophy, Education

Shutt, Roscoe E.....Lincoln
B. Sc. 1916, The University of Nebraska
Geology

Smith, Arthur Lawrence.....Lincoln
A. B. 1912, The University of Nebraska; M. D. 1913, Rush Medical College
Bacteriology

Snell, Hazel Frost.....Lincoln
A. B. 1912, The University of Nebraska
Political Science and Sociology

Staley, Alvah ..... Superior
A. B. 1901, The University of Nebraska
Education

Steckelberg, Anna Louise ..... Plymouth
B. Sc. 1914, Kansas Agricultural College
English Language and Literature

Stilwell, Charles F ..... Lincoln
B. Sc. 1901, Nebraska Wesleyan University
Education

Stimson, James Miller ..... Pawnee, Oklahoma
B. Sc. 1899, Iowa State College
American History, Education

Stockman, Harold John ..... University Place
A. B. 1916, The University of Nebraska
Chemistry

Stone, Carl Bernard ..... Lincoln
A. B. 1916, Bethany College
Chemistry

Stout, Humbert Gambetta ..... Overton
A. B. 1914, Nebraska Wesleyan University
Education

Strähle, John Jacob ..... Beaver City
A. B. 1916, Union College
Economics and Commerce

Swanson, Mabel Eleanor ..... Holdrege
A. B. 1908, The University of Nebraska
Botany, Education

Tanner, Herbert Giles ..... St. Louis, Missouri
B. Sc. 1915, Ottawa University
Chemistry

Taylor, Florence Leo ..... College View
A. B. 1913, Union College
Romance Languages

Theisen, Henry Herbert ..... West Point
A. B. 1915, The University of Nebraska
Education

Therkelsen, Carrie Chmelka ..... Lincoln
A. B. 1914, The University of Nebraska
American History, Germanics

Thiel, Albert Frederick ..... Lincoln
A. B. 1916, University of Minnesota
Botany

Thomas, Clyde Samuel ..... Omaha
A. B. 1914, The University of Nebraska
Pharmacology

Thompson, Benjamin Harrison ..... Lincoln
B. Sc. 1916, The University of Nebraska
Dairy Husbandry

Thomson, Ray Thomas ..... Orchard
B. Sc. 1915, The University of Nebraska
Botany

Thorson, Theodore ..... Lincoln
B. Sc. 1915, Iowa State College
Dairy Husbandry

Towne, Jessie Margaret ..... Omaha
A. B. 1916, The University of Nebraska
Greek

Trout, Linneaous Robert ..... Table Rock
A. B. 1909, York College
Education

Vose, Leonard Owen ..... Lincoln
B. Sc. 1917, The University of Nebraska
Bacteriology

Ward, Ida Amine ..... Litchfield
A. B. 1914, The University of Nebraska
English Language and Literature

Ward, Wylie Ray ..... Overton
B. Sc. 1915, The University of Nebraska
Agronomy

Warwick, Charles William ..... Dodge
A. B. 1911, Nebraska Wesleyan University
American History, Political Science and Sociology

Waters, Winifred Belle ..... Lincoln
A. B. 1910, The University of Nebraska
Latin

Watson, Curry Wathan ..... Lincoln
B. Sc. 1916, The University of Nebraska
Farm Management, Agronomy, Animal Husbandry

Weinard, Fred Francis ..... Lincoln
B. Sc. 1916, The University of Nebraska
Botany

Werner, Alfred Henry ..... University Place
A. B. 1916, The University of Nebraska
Agricultural Engineering

Weseen, Maurice Harley ..... Ames, Iowa
A. B. 1914, The University of Nebraska
English Language and Literature

Westhoff, James ..... Lincoln
A. B. 1916, Nebraska Wesleyan University
English History, Education

White, Chesley Frank ..... Wisner
A. B. 1915, Nebraska Wesleyan University
Philosophy, Education

White, Helen Ida ..... Edgemont, South Dakota
A. B. 1917, The University of Nebraska
European History

Williams, Hobart Floyd ..... Lincoln
B. Sc. 1912, University of Missouri
Farm Management, Economics

Wilson, Alva ..... Bethany
B. Sc. 1916, The University of Nebraska; M. D. 1897, Eclectic Medical Institute
Zoology

Wilson, Ira Glade ..... Peru
B. E. 1915, Peru State Normal
English Language and Literature

Wimberly, Lowry Charles ..... Lincoln
A. B. 1916, The University of Nebraska
English Language and Literature

Wolf, Albert Emil ..... Lincoln
A. B. 1907, The University of Nebraska
Political Science and Sociology

Wood, Albert Gerard ..... Greeley
A. B. 1909, University of Indiana
Botany

Wood, Wilma Melvina ..... Lincoln
A. B. 1908, The University of Nebraska
Germanics

Zumwalt, Clerin Thurston ..... Crete
A. B. 1915, Drury College
Zoology, Political Science and Sociology

Candidates for the Degree of Master of Science

Colcord, Frank Maynard ..... Lincoln
B. Sc. 1915, University of Illinois
Dairy Husbandry

Colman, Howard Notson ..... Lincoln
A. B. 1915, B. Sc. 1915, The University of Nebraska
Dairy Husbandry

Lewis, Frank Clark ..... Lincoln
B. Sc. 1913, Kansas Agricultural College
Agricultural Engineering

Candidates for the Degree of Master of Science in Agricultural Engineering

Kable, George Wallace ..... Lincoln
B. Sc. 1914, University of California

Seaton, Laurence Froyd ..... Lincoln
B. Sc. 1911, The University of Nebraska

Candidate for the Degree of Master of Science in Electrical Engineering

Selleck, John Kent ..... Chicago, Illinois
B. Sc. 1912, The University of Nebraska

Graduate Students Without Reference to a Degree

Anderson, James Thomas ..... Ashland
A. B. 1916, Nebraska Wesleyan University

Anderson, Lawrence Raymond ..... College View
A. B. 1904, Union College; A. B. 1909, The University of Nebraska

Ashby, Ruth ..... Fairmont
A. B. 1917, The University of Nebraska

Aul, William Eugene Adolphus.....College View
B. Sc. 1897, M. Sc. 1899, Battle Creek College; A. M. 1912, The University of Nebraska

Bailey, Rachel McGee.....College View
A. B. 1914, Union College

Baros, Eunice A.....Milford
A. B. 1915, The University of Nebraska

Barstow, Louise Whittlesey.....Fremont
A. B. 1914, Doane College

Bastron, Carl Heinrich.....Lincoln
B. Sc. 1914, M. D. 1916, The University of Nebraska

Beck, Earl Clifton.....Panama
A. B. 1915, A. M. 1916, The University of Nebraska

Becker, Arthur Frederick.....Lincoln
A. B. 1904, The University of Nebraska

Benson, Elsie Andrews.....College View
A. B. 1904, Union College

Blue, Elmer Cassius.....College View
A. B. 1914, Union College

Bollman, Edwin.....Lincoln
A. B. 1886, Carthage College; A. M. 1910, Augustana College

Boyd, Ida Cook.....Lexington
A. B. 1905, The University of Nebraska

Boyd, Ralph Woodside.....Fremont
B. Sc. 1916, Coe College

Brereton, Winifred.....Emmetsburg, Iowa
A. B. 1913, Grinnell College

Brown, Charles Neil.....Lincoln
A. B. 1914, The University of Nebraska

Brown, Sadie Reye.....Minden
A. B. 1915, The University of Nebraska

Brunig, Morton Paul.....Hebron
A. B. 1916, Nebraska Wesleyan University

Bryan, Edna Elizabeth.....Lincoln
B. Sc. 1910, The University of Nebraska

Burr, George Lawrence.....Lincoln
A. B. 1915, The University of Nebraska

Campbell, Harold Ray.....Osceola
B. Sc. 1916, The University of Nebraska

Canfield, Sarah Wright.....Tecumseh
A. B. 1916, The University of Nebraska

Chaikin, Annis.....Lincoln
A. B. 1908, A. M. 1910, The University of Nebraska

Chapin, Eunice Spalding.....Lincoln
A. B. 1915, The University of Nebraska

Chung, Henry.....Kearney
A. B. 1917, The University of Nebraska

Clark, Ellen Elizabeth.....Lincoln
A. B. 1906, The University of Nebraska

Colbert, Elvice Morton.....Harrison
A. B. 1910, Valparaiso University

Conley, Robert Andrew.....Lincoln
A. B. 1915, Cotner University

Colpitts, Mary Alice.....Point de Butte, N. B., Canada
A. B. 1913, Mt. Allison University; A. M. 1914, Cornell College

Craig, Clara Louisa.....Lincoln
A. B. 1903, The University of Nebraska

Crawford, Robert Platt.....Lincoln
A. B. 1917, The University of Nebraska

Crosbie, Milo Havilah.....Central City
Ph. B. 1909, Nebraska Central College

Curtis, Scena Hansen.....Lincoln
A. B. 1907, The University of Nebraska

Davis, Elton Ray.....Trenton, Missouri
B. Sc. 1913, University of Missouri

Day, Alice Ellen.....Ralston
A. B. 1915, The University of Nebraska

Dohner, Florence Lyman.....Lincoln
A. B. 1911, A. M. 1915, The University of Nebraska

Eichberg, Lydia Louise.....University Place
A. B. 1914, Nebraska Wesleyan University

Ellis, Robert Walpole.....Lincoln
B. Sc. 1897, University of South Dakota; A. M. 1910, University of Wisconsin

Ewing, Halle Laura.....Lincoln
M. D. 1899, University of Michigan; A. B. 1911, A. M. 1912, The University of Nebraska

Ferguson, Ollin Wayman.....Lincoln
B. Sc. 1903, Ohio State University

Filley, Horace Clyde.....Lincoln
A. B. 1903, A. M. 1911, The University of Nebraska

Finley, Howard John.....Grand Island
A. B. 1915, Grand Island College

Foster, Celia.....Lincoln
A. B. 1908, The University of Nebraska

Frost, Roland Meredith.....Lincoln
A. B. 1913, The University of Nebraska

Glass, Jessie June.....Lincoln
A. B. 1909, The University of Nebraska

Gramlich, Louis Trumble.....Lincoln
B. Sc. 1913, The University of Nebraska

Gutberlet, Samuel Archibald.....Lincoln
A. B. 1915, The University of Nebraska

Hagelin, Paul Albert.....Wahoo
A. B. 1916, The University of Nebraska

Hayden, Myrtle Gladys.....University Place
A. B. 1910, Nebraska Wesleyan University; A. M. 1914, The University of Nebraska

Heckler, Bernice.....Lincoln
A. B. 1916, The University of Nebraska

Hiatt, Lulu Blanche.....College View
A. B. 1912, Union College

Hiatt, Marjette May.....Sidney, Iowa
A. B. 1914, The University of Nebraska

Hill, Arthur Lorn ..... Crete
A. B. 1912, Doane College

Hobson, Cloy St. Clair ..... Beaver City
A. B. 1916, The University of Nebraska

Holaday, Lillie Maurine ..... Lincoln
B. Sc. 1900, Union College

Irwin, James La Vergne ..... Chadron
B. Ed. 1916, Chadron Normal

Jackson, Mary Frances ..... Lincoln
B. Sc. 1898, The University of Nebraska

James, Jessie Gertrude ..... Lincoln
A. B. 1916, The University of Nebraska

Kellogg, Jessie May ..... Red Cloud
A. B. 1906, Washington State University

Kies, Paul Philemon ..... Lincoln
A. B. 1911, Central Wesleyan, Missouri; A. M. 1915, The University of Nebraska

Kubic, Theodore ..... Clarkson
A. B. 1915, The University of Nebraska

Kunkel, Margaret Anita ..... Osceola
A. B. 1912, The University of Nebraska

Lehr, Jessie ..... Surprise
A. B. 1914, Nebraska Wesleyan University

Lowe, Jessie Opal ..... Fairmont
A. B. 1908, Boston University

Lyman, Blanche Margaret ..... Lincoln
A. B. 1912, A. M. 1913, The University of Nebraska

McGahey, Florence Irwin ..... Lincoln
A. B. 1901, The University of Nebraska

McMahon, Clara Marguerite ..... Lincoln
A. B. 1916, The University of Nebraska

Magee, Mary Theresa ..... Lincoln
A. B. 1909, St. Joseph's College

Marrin, Frank Edward ..... O'Neill
A. B. 1911, Creighton University

Martin, Ruth Elizabeth ..... University Place
A. B. 1914, Nebraska Wesleyan University

Mathews, Elsie Forest ..... Lincoln
A. B. 1912, The University of Nebraska

Matzner, Adolph Johann Gustaf ..... Lincoln
Theological Diploma 1902, Eden Theological Seminary

Miller, Ann Wilson ..... Culbertson
A. B. 1910, The University of Nebraska

Miller, Louise ..... Lincoln
A. B. 1903, A. M. 1905, The University of Nebraska

Morris, Nellie Esther ..... Lincoln
B. Sc. 1916, The University of Nebraska

Nelson, Clara Jeanette ..... Oakland
A. B. 1914, A. M. 1916, The University of Nebraska

Niehaus, Fred Wilhelm ..... Omaha
B. Sc. 1914, M. D. 1916, The University of Nebraska

Nordgren, August Edward ..... Orchard
A. B. 1914, The University of Nebraska

Norris, Ferris Waldo ..... Lincoln
B. Sc. 1916, The University of Nebraska

Oescheger, Anna Elizabeth ..... Valparaiso
A. B. 1914, Cotner University

Olson, Oscar Evald ..... Swedeburg
A. B. 1916, Gustavus Adolphus College

Patterson, Sarah Etta ..... Lincoln
A. B. 1908, University of Missouri

Persinger, Mary Eudora ..... Lincoln
A. B. 1910, The University of Nebraska

Pool, Vera ..... Minden
A. B. 1916, The University of Nebraska

Pope, Blanche Emily ..... Red Cloud
A. B. 1915, The University of Nebraska

Proudfit, Alice Juliet ..... Lincoln
A. B. 1916, The University of Nebraska

Ranney, Edna Louise ..... Bethany
A. B. 1915, Cotner University

Reimers, William ..... Lincoln
A. B. 1913, A. M. 1916, The University of Nebraska

Rhoades, Elmer Lamont ..... Lincoln
B. Sc. 1916, University of Missouri

Richards, Thomas Andrews ..... Syracuse
A. B. 1916, Grand Island College

Richardson, Hazel M ..... Auburn, Iowa
A. B. 1915, Union College

Roane, Lucile ..... Lincoln
A. B. 1916, The University of Nebraska

Ross, Ralph Robert ..... Blair
B. Sc. 1912, Armour Institute

Rummons, Constance ..... Lincoln
A. B. 1916, The University of Nebraska

Ryman, Eugene Miles ..... Lincoln
M. D. 1910, Creighton University

Savage, Howard Anthony ..... Lincoln
A. B. 1916, The University of Nebraska

Savage, Lottie ..... Lincoln
A. B. 1914, The University of Nebraska

Schriever, Fred ..... Dakota City
A. B. 1914, Morningside College

Schwertley, Alice Katherine ..... Holdrege
A. B. 1904, The University of Nebraska

Scott, Robert Douglas ..... Lincoln
B. Sc. 1904, University of Chicago; A. M. 1910, The University of Nebraska

Shaffer, Elizabeth Mary ..... David City
A. B. 1910, The University of Nebraska

Short, Mamie Frances ..... Lincoln
B. Sc. 1903, The University of Nebraska

Skinner, Mary Elizabeth.....Lincoln
A. B. 1910, The University of Nebraska

Smith, Chauncey William.....Lincoln
B. Sc. 1914, The University of Nebraska

Smith, Edwin Erwin.....Bethany
A. B. 1907, Cotner University

Staats, Etta Pearle.....Plattsmouth
A. B. 1906, The University of Nebraska

Stahl, Edith Columbia.....University Place
A. B. 1914, Nebraska Wesleyan University

Stamper, Juan Francisco.....St. Louis, Missouri
M. Sc. 1911, Western Normal

Starr, Elias Franklin.....Grand Island
A. B. 1906, Grand Island College

Steuteville, Mary.....Brownville
A. B. 1911, Nebraska Wesleyan University

Stevenson, Pearl.....Auburn
A. B. 1904, The University of Nebraska

Stewart, Paul Hesden.....Kennard
B. Sc. 1916, The University of Nebraska

Stufft, Clella.....Fairfield
A. B. 1916, The University of Nebraska

Swanbom, Alaric Roy.....Wahoo
A. B. 1913, Gustavus Adolphus College

Swanson, Alice Amanda.....Holdrege
A. B. 1906, The University of Nebraska

Taylor, Albion Guilford.....College View
A. B. 1915, Highland Park College

Taylor, Charles William.....Lincoln
A. B. 1898, The University of Nebraska

Thomas, Ellamay Colvin.....Lincoln
B. Sc. 1912, Kearney State Normal

Vosacek, Frank Richard.....Omaha
B. Sc. 1908, The University of Nebraska

Wagey, Pearl Alice.....Cambridge
A. B. 1913, The University of Nebraska

Walker, Florence.....University Place
A. B. 1911, Nebraska Wesleyan University

Watson, Julia Pamelia.....Lincoln
A. B. 1888, Iowa Wesleyan University

Weaver, Ernest Levi.....Wilton, Iowa
A. B. 1905, Nebraska Wesleyan University

Williamson, Bessie Belle.....Galesburg, Illinois
A. B. 1909, Lombard College

Winkfield, Orange Willis.....Watona, Oklahoma
A. B. 1911, S. T. B. 1914, Biddle University

Winship, Fred C.....Lincoln
B. L. 1904, Nebraska Wesleyan University; A. M. 1910, University of Denver

Woodburn, Florence Mildred ..... Lincoln
A. B. 1913, Ottawa University

Woods, Lucy Truitt ..... Lincoln
A. B. 1909, The University of Nebraska

Yoder, William Alonzo ..... Omaha
A. B. 1903, The University of Nebraska

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Bulletin of The University of Nebraska

ANNUAL CATALOG

OF THE

GRADUATE COLLEGE

INCLUDING THE

Graduate School of Education

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ANNOUNCEMENT

1918-19

Published by the University May 9, 1918
LINCOLN, NEBRASKA
The Bulletin of the University of Nebraska is published monthly in February, semi-monthly in March, semi-weekly in April and monthly in May and November of each year by the University of Nebraska. Entered at the Post-Office at Lincoln, Nebraska, as second-class matter under Act of Congress July 16, 1894.

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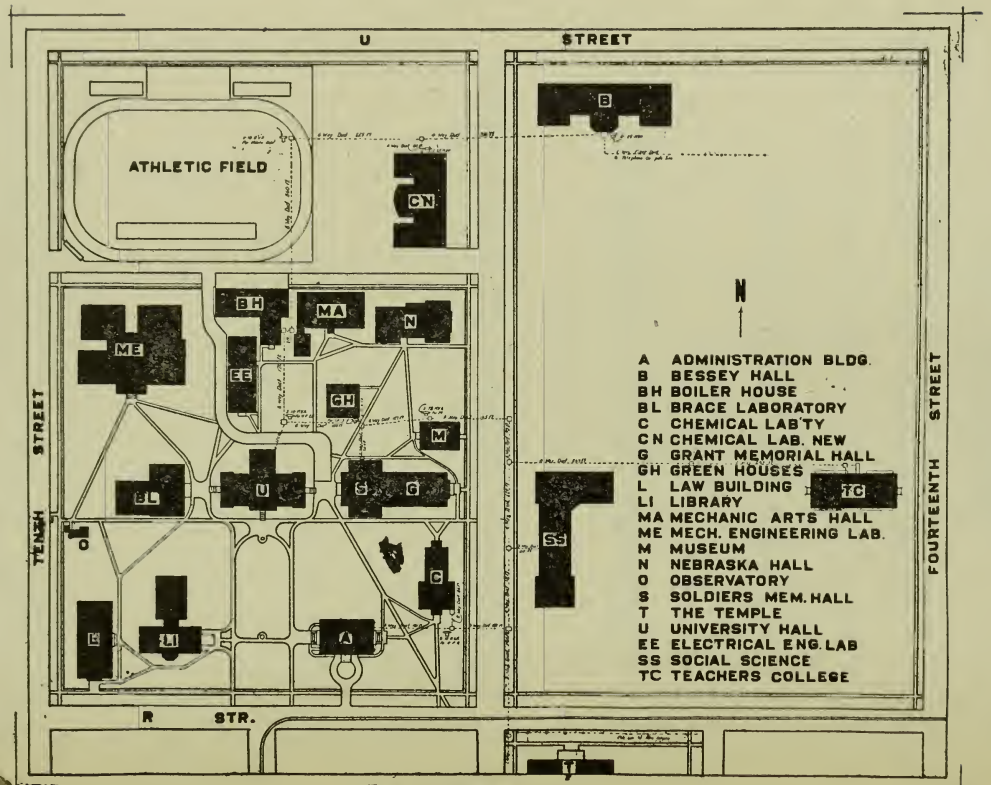
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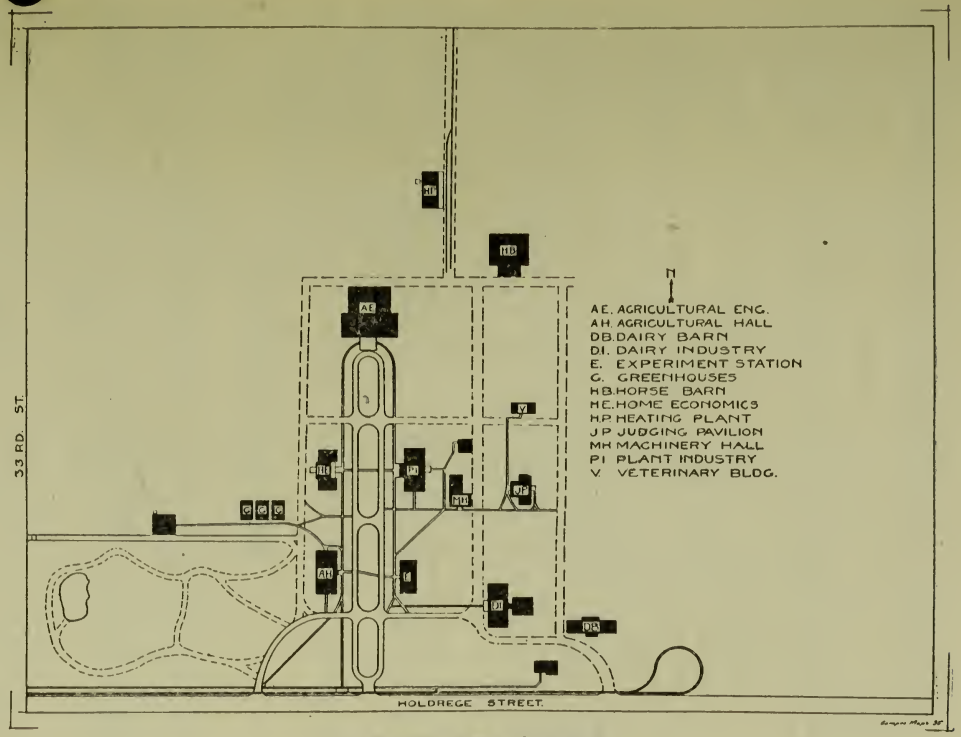
BH BOILER HOUSE
BL BRACE LABORATORY
C CHEMICAL LAB'TY
CN CHEMICAL LAB. NEW
G GRANT MEMORIAL HALL
GH GREEN HOUSES
L LAW BUILDING
LI LIBRARY
MA MECHANIC ARTS HALL
ME MECH. ENGINEERING LAB.
M MUSEUM
N NEBRASKA HALL
O OBSERVATORY
S SOLDIERS MEM. HALL
T THE TEMPLE
U UNIVERSITY HALL
EE ELECTRICAL ENG. LAB
SS SOCIAL SCIENCE
TC TEACHERS COLLEGE
TENTH STREET
FOURTEENTH STREET
R STR.

City Campus



UNIVERSITY FARM CAMPUS

COLLEGES AND SCHOOLS OF THE UNIVERSITY

The University of Nebraska comprises the following colleges and schools:

The Graduate College, including the Graduate School of Education.

The College of Arts and Sciences, including the Schools of Commerce and Fine Arts.

The Teachers College, including the Teachers College High School.

The College of Engineering.

The College of Agriculture, including the Schools of Agriculture.

The College of Law.

The College of Medicine.

The College of Pharmacy.

The Nebraska Agricultural Experiment Station, the Nebraska School of Agriculture at Curtis and the Experimental Substations at North Platte, Valentine and Scottsbluff, and the Agricultural Extension Service are under the supervision of the Board of Regents of the University.

For separate catalogs or information regarding any of the above colleges or schools, address

THE REGISTRAR,
The University of Nebraska,
Lincoln, Nebraska.

THE UNIVERSITY YEAR

The regular session of the University embraces thirty-nine weeks, beginning the second Wednesday after the first Monday in September, and is divided into a first and a second semester. A summer session of eight weeks immediately follows the close of the second semester class work. Instruction is offered from September to August.

CALENDAR FOR THE GRADUATE COLLEGE

1918		
September 11-14	Wednesday-Saturday	First semester registration.
September 14	Saturday, 8 p. m.	University reception to all students
September 17	Tuesday, 11 a. m.	Opening address by the Chancellor
November 26	Tuesday, 6 p. m.	Thanksgiving recess begins
November 30	Saturday, 12 m.	Thanksgiving recess ends
December 10	Tuesday	Regular meeting of the Board of Regents
December 21	Saturday, 12 m.	Christmas recess begins
1919		
January 4	Saturday, 12 m.	Christmas recess ends
Jan. 25-Feb. 1	Saturday-Saturday	First semester examinations
Jan. 25-Feb. 1	Saturday-Saturday	Entrance examinations
Jan 29-Feb. 1	Wednesday-Saturday	Second semester registration
February 3	Monday	Second semester classes begin
February 15	Saturday	Charter Day. Regular meeting of the Board of Regents. Twenty-third Annual Mid-Winter Commencement
March 29	Saturday, 12 m.	Spring recess begins
April 5	Saturday, 12 m.	Spring recess ends
April 8	Tuesday	Regular meeting of the Board of Regents
May 31-June 7	Saturday-Saturday	Second semester examinations
Commencement Week		
June 7	Saturday, 10 a. m.	Final recommendations for degrees by faculties
June 7	Saturday	Class Day. Alumni Day
June 7	Saturday evening	Annual meeting of the Board of Regents
June 8	Sunday	Baccalaureate Sermon
June 9	Monday	Forty-eighth Annual Commencement
Summer Session 1919		
June 9	Monday	Summer Session begins
June 13-14	Friday-Saturday	Registration Summer Session
August 1	Friday, 8 p. m.	Thirteenth Annual Summer Session Commencement
1919-1920		
September 10	Wednesday	First semester begins (1919-1920)

The Graduate College

OFFICERS OF ADMINISTRATION AND INSTRUCTION

[1]SAMUEL AVERY, Ph. D., LL. D., Chancellor of the University.

WILLIAM GRANGER HASTINGS, A. B., Acting Chancellor of the University.

LUCIUS ADELNO SHERMAN, Ph. D., LL. D., Dean of the Graduate College and Professor of English Language and Literature. *(Head of Department of English Language and Literature.)*

FLORENCE IRWIN McGAHEY, A. B., Registrar and University Publisher. *(Secretary of the Faculties.)*

HARTLEY BURR ALEXANDER, Ph. D., Professor of Philosophy.

JOHN EDWIN ALMY, Ph. D., Professor of Experimental Physics.

LEON EMMONS AYLSWORTH, A. M., Professor of Political Science and Sociology.

GROVE ETTINGER BARBER, A. M., Professor of Roman History and Literature. *(Head of Department of Roman History and Literature.)*

ERWIN HINCKLEY BARBOUR, Ph. D., Professor of Geology. *(Head of Department of Geology.)*

FRANKLIN DAVIS BARKER, Ph. D., Professor of Medical Zoology and Parasitology.

GEORGE BORROWMAN, Ph. D., Associate Professor of Chemistry.

WILLIAM CHARLES BRENKE, M. S., Ph. D., Professor of Mathematics.

JUDD NOBLE BRIDGMAN, M. S., Associate Professor of Civil Engineering. *(Acting Head of Department of Civil Engineering.)*

LAWRENCE BRUNER, B. Sc., Professor of Entomology and Entomologist of the Experiment Station. *(Head of Department of Entomology.)*

PHILO MELVIN BUCK, Jr., A. M., Professor of Rhetoric. On leave. Captain in the Adjutant General's Department, 34th Division.

WILLIAM WESLEY BURR, B. Sc., Professor of Agronomy. *(Head of Department of Agronomy.)*

HOWARD WALTER CALDWELL, A. M., Professor of American History. *(Head of Department of American History.)*

ALBERT LUTHER CANDY, Ph. D., Professor of Mathematics. *(Head of Department of Mathematics.)*

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[1]Absent on leave from February 1 to September 1, 1918 in war service.

LEON WILSON CHASE, A. E., Professor of Agricultural Engineering. On leave. Major of Ordnance. *(Head of Department of Agricultural Engineering.)*

GEORGE RICHARD CHATBURN, A. M., C. E., Professor of Applied Mechanics and Machine Design. *(Head of Department of Applied Mechanics and Machine Design.)*

GEORGE EVERT CONDRA, Ph. D., Professor of Geography and Conservation. *(Head of Deparment of Geography and Conservation.)*

CLARA CONKLIN, A. M., Professor of Romance Languages and Literatures. *(Head of Department of Romance Languages and Literatures.)*

[1]BENTON DALES, Ph. D., Professor of Chemistry. *(Head of Department of Chemistry.)*

WILLIAM FRANCIS DANN, A. M., Professor of History and Criticism of the Fine Arts. *(Head of Department of History and Criticism of the Fine Arts.)*

[2]ELLERY WILLIAMS DAVIS, Ph. D., Dean of the College of Arts and Sciences and Professor of Mathematics. *(Head of Department of Mathematics.)*

CARL CHRISTIAN ENGBERG, Ph. D., Executive Dean and Professor of Applied Mathematics.

MINNIE THROOP ENGLAND, Ph. D., Assistant Professor of Economics and Commerce.

OLIN JEROME FERGUSON, M. E. E., Acting Dean of the College of Engineering and Professor of Electrical Engineering. *(Head of Department of Electrical Engineering.)*

HORACE CLYDE FILLEY, A. M., Professor of Farm Management. *(Head of Department of Farm Management.)*

FRED MORROW FLING, Ph. D., Professor of European History. *(Head of Department of European History.)*

MILLER MOORE FOGG, A. M., Professor of Rhetoric, in charge of Debate and Newspaper Writing.

CHARLES FORDYCE, Ph. D., Dean of the Teachers College and Professor of Educational Theory and Practice. *(Head of Department of Educational Theory and Practice.)*

LAURENCE FOSSLER, A. M., Professor of Germanic Languages and Literatures. *(Head of Deparment of Germanic Languages and Literatures.)*

MARY LOUISE FOSSLER, A. M., Assistant Professor of Chemistry.

---

[1]Resigned.
[2]Deceased.

JULIUS HERMAN FRANDSEN, M. S. A., Professor of Dairy Husbandry. *(Head of Department of Dairy Husbandry.)*

PROSSER HALL FRYE, A. B., Professor of Rhetoric. *(Head of Department of Rhetoric.)*

SHERLOCK BRONSON GASS, Ph. B., Professor of Rhetoric.

PAUL HENRY GRUMMANN, A. M., Director of the School of Fine Arts and Professor of Modern German Literature.

AUGUST ERNEST GUENTHER, Ph. D., Professor of Physiology. *(Head of Department of Physiology.)* (In Omaha.)

WILLIAM GRANGER HASTINGS, A. B., Dean of the College of Law and Professor of Law. *(Head of Department of Jurisprudence and Public Law.)*

EDGAR LENDERSON HINMAN, Ph. D., Professor of Logic and Metaphysics.

VERNON LEO HOLLISTER, E. E., Associate Professor of Electrical Engineering.

GEORGE ELLIOTT HOWARD, Ph. D., Professor of Political Science and Sociology. *(Head of Department of Political Science and Sociology.)*

ROBERT FRANCIS HOWARD, M. A., Professor of Horticulture. *(Head of Department of Horticulture.)*

ALICE CUSHMAN HUNTER, Ph. D., Assistant Professor of Roman History and Literature.

GUERNSEY JONES, Ph. D., Professor of English History. *(Head of Department of English History.)*

THEODORE ALEXANDER KIESSELBACH, A. M., Professor of Agronomy.

JAMES THOMAS LEES, Ph. D., Professor of Greek History and Literature. *(Head of Department of Greek History and Literature.)*

JAMES EDWARD LE ROSSIGNOL, Ph. D., Director of School of Commerce and Professor of Economics and Commerce. *(Head of Department of Economics and Commerce.)*

ALICE MARIE LOOMIS, A. M., Professor of Home Economics. *(Head of Department of Home Economics.)*

GEORGE ANDREW LOVELAND, A. M., LL. B., Professor of Meteorology.

GEORGE WASHINGTON ANDREW LUCKEY, Ph. D., Dean of the Graduate School of Education and Professor of Education. *(Head of Department of Education.)*

RUFUS ASHLEY LYMAN, A. M., M. D., Dean of the College of Pharmacy, and Professor of Physiology and Pharmacology. *(Head of Department of Physiology and Pharmacology.)*

EDWIN MAXEY, D. C. L., Ph. M., Professor of Public Law and Diplomacy.

BURTON EVANS MOORE, Ph. D., Professor of Physics.

CLARK EDMUND PERSINGER, A. M., Professor of American History.

HARLEY MARTIN PLUM, Ph. D., Professor of Chemistry.

RAYMOND JOHN POOL, Ph. D., Professor of Botany. *(Head of Department of Botany.)*

LOUISE POUND, Ph. D., Professor of English Language.

CHARLES WILLIAM PUGSLEY, B. Sc., Professor of Agricultural Extension.

ELIZABETH IRENE REESE, A. M., Associate Professor of Romance Languages and Literatures.

FREDERICK WARREN SANFORD, A. B., Associate Professor of Roman History and Literature.

ANDREW D. SCHRAG, Ph. D., Associate Professor of Germanic Languages and Literatures.

ADDISON ERWIN SHELDON, A. M., Lecturer in Political Science and Director Legislative Reference Bureau.

CLARENCE AURELIUS SKINNER, Ph. D., Professor of Physics. *(Head of Department of Physics.)*

PHILIP KUHNS SLAYMAKER, M. E., Professor of Machine Design.

OSCAR VAN PELT STOUT, C. E., Dean of the College of Engineering and Professor of Civil Engineering. On leave. Major in the Engineering Officers Reserve Corps. *(Head of Department of Civil Engineering.)*

FREDERICK AMES STUFF, A. M., Litt. D., Professor of English Language and Literature.

MYRON HARMON SWENK, A. M., Professor of Economic Entomology.

GOODWIN DE LOSS SWEZEY, A. M., Professor of Astronomy. *(Head of Department of Astronomy.)*

WILLIAM GEORGE LANGWORTHY TAYLOR, A. B., LL. B., Professor Emeritus of Economics and Commerce.

LOUIS BRYANT TUCKERMAN, Jr., A. B., Professor of Theoretical Physics.

FRED WILBERT UPSON, Ph. D., Professor of Chemistry. *(Head of Department of Chemistry.)*

GEORGE OLIEN VIRTUE, Ph. D., Professor of Economics and Commerce.

HERBERT HAROLD WAITE, A. M., M. D., Professor of Bacteriology and Pathology. *(Head of Department of Bacteriology and Pathology.)*

ELDA REMA WALKER, Ph. D., Associate Professor of Botany.

CHARLES WILLIAM WALLACE, Ph. D., Professor of English Dramatic Literature.

JOHN ERNST WEAVER, Ph. D., Professor of Ecology.

HUTTON WEBSTER, Ph. D., Professor of Social Anthropology.

DAVID DAY WHITNEY, Ph. D., Professor of Zoology and Anatomy.

EDWIN MEAD WILCOX, Ph. D., Professor of Plant Pathology and Physiology and Plant Pathologist of the Experiment Station. *(Head of Department of Plant Pathology and Physiology.)*

WILLIAM ALBERT WILLARD, Ph. D., Professor of Anatomy. (In Omaha.)

ROBERT HENRY WOLCOTT, A. M., M. D., Professor of Zoology. *(Head of Department of Zoology.)*

HARRY KIRKE WOLFE, Ph. D., Professor of Philosophy. *(Head of Department of Philosophy.)*

Graduate Council

Professors Alexander, Barker, Brenke, Chatburn, Fossler, Lees, Sherman, Upson, Webster.

Standing Committees

Examinations—Professors Barker, Webster.

Enrollment—Professors Lees, Upson.

Publication—Professors Brenke, Fossler.

Standardization—Professors Alexander, Chatburn.

THE GRADUATE COLLEGE

Organization and History of the Graduate College—Graduate instruction in the University of Nebraska was organized in 1886. In September of that year courses were offered in thirteen subjects, including Sanskrit, Old French, Germanics, and Institutional History. In 1895 a Graduate School was organized, under a dean and a designated faculty. The number of students increased steadily, and in 1898 thirty-nine candidates received degrees. During the second period, lasting till 1909, many graduate subjects were added, including Astronomy, Bacteriology, Commerce, Education, English History, Geography, Physiology, and Sociology. In the legislative session of 1909 the charter of the University was amended, and the establishment of seven colleges, instead of the five colleges named in the charter, was authorized. By this act the Graduate School became the Graduate College of the University of Nebraska.

Purpose of the Graduate College—The Graduate College extends and enlarges the work of the undergraduate departments, in order to provide facilities for specialization and research. It enables students to employ themselves for two or more semesters on uncompleted subjects, or other work for which the discipline of college training has prepared them. It furnishes expert and standard preparation for those who expect to become investigators, consulting engineers, or teachers in academies and colleges. The Graduate College offers these privileges, which would be costly in an institution differently endowed, practically without expense to the student.

Degrees—The degrees of Doctor of Philosohy, Master of Arts, Master of Science, Agricultural Engineer, Civil Engineer, Electrical Engineer, and Mechanical Engineer are conferred on registered students, by the Board of Regents, upon recommendation of the Graduate Faculty.

ADMISSION TO THE GRADUATE COLLEGE

Classes of Graduate Students—The Graduate College recognizes three classes of applicants: those who, having taken a bachelor's degree, wish to broaden their education without reference to higher degrees; those who wish to be candidates for advanced degrees, but are deficient in undergraduate preparation; and those who are eligible to candidacy, and wish to enter at once upon their special work. Those who do not wish to be candidates for an advanced degree are at once admitted, on evidence of graduation, to approved work in the Graduate

College. Persons presenting first degrees in Law or Medicine or Theology may be admitted in this class. Those seeking advanced degrees, with insufficient preparation, are admitted to graduate standing, but must at once make up their deficiencies by taking courses in the undergraduate colleges. On completion of these assigned or arranged courses, such students are recognized as applicants of the third class, and may be registered as candidates for the degree desired.

Registration—Graduates of the undergraduate colleges of this University, or of other colleges having equivalent courses and requiring four years of standard preparation, who have been accepted and approved by heads of departments in charge of the subjects proposed, are registered by the Dean of the college for the degree they designate. For the degree of Doctor of Philosophy, the candidate must be registered for a major subject and an approvably related minor, or a major subject and two approvably related minors. Candidates for the degree of Master of Arts may be registered for a single subject, or for a major and a minor subject, or for a major and two minors.

Fees

The Secretary does not cash personal checks for accommodation. Checks on personal accounts will be received when written for the amount of the fees only. Parents or guardians are advised to write checks for students' fees and their other expenses separately; if this is not done, students should deposit in local banks and give their own checks for the amount of fees. Misapprehension as to the amounts charged for fees is thereby avoided.

Matriculation (payable on entering each college) ..... $ 5.00

Being statutory, this fee cannot be refunded except when collected in error. It is also charged any student changing membership from one college to another.

Incidental, each semester 3.00

[1]Library, each semester 1.00

Diploma fee, for each advanced degree 10.00

Diploma fee, for each advanced degree (in absentia) 20.00

Agricultural Engineering—Courses 5, 6, 7, $1; 8, 9, 10, 12, $3.

Applied Mechanics—Courses 15, 25, 26, $5; 18, $4; 16, 17, $3.

Bacteriology and Pathology—Courses 2a, 3, 4, $5.

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[1]Graduate students taking laboratory work are charged the usual laboratory fees. A student paying any laboratory fee is not required to pay the library fee.

Botany—Courses 5, 6, 20, $3; 11, 12, 13, 14, 27, 28, 29, 31, 33, 34, $1; 15, 17, 18, 21, 22, $2; 37, 38, 41, 42, 43, 44, 45, 46, for each credit hour a semester, $1.

Chemistry—Courses 20, 27, 51, 52, 80, 82, 84, 86, 88, $5; 28, 67, 69, $4; 46, $6; 33, 34, $8; 5, 23E, 23F, 23G, 23 I S, 23M, 23 Q R, 23W, 24, 39, 40, 68 for each credit hour a semester, $2; 43 for 3-5 hours, 44 for 4-6 hours, $2-6.

Civil Engineering—Course 2, $4; 5a, 6a, 8, $3.

Entomology—Courses 15, 16, 17, 18, for each credit hour a semester, $1.

Geography and Conservation—Courses 23, 24, $1.

Geology—Courses 27, 34, 35, 35a, $2; 15, 16, $3.

Horticulture—Courses 23, 24, $2.

Mechanical Engineering—Courses 16, 17, $6; 15, $5; 18, $2.

Physics—Courses, 7, 8, 9, $4.

Physiology and Pharmacology—Course 10, $2; 19, 20, $5.

Plant Pathology and Physiology—Courses 117, 118, $3; 115, 116, for each credit hour a semester, $1; 125, 126, 127, 128, for each credit hour a semester, $2.

Zoology—Courses 32, 35, $2; 33, 34, 37, 43, for each credit hour a semester, $1.

The usual laboratory fees are required of those taking work in any science or engineering department. But any student who is able to devote only a portion of his time to his University work may, upon the recommendation of the Graduate Council to the University Secretary, be permitted to register free of charge after he has paid the usual dues and fees for four semesters, if a candidate for the degree of Master of Arts, and for eight semesters, if a candidate for the degree of Doctor of Philosophy.

REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

Candidacy for the degree of Doctor of Philosophy can in no case be completed in less than three years of graduate study. Two years of such work in another institution, when carried with proper facilities and under competent instruction, may be credited by the Graduate Council; but the last year of candidacy must be spent in residence in the Graduate College. Each candidate must, at registration, satisfy the Graduate Council that he has a reading knowledge of French and German, or must arrange with the heads of these departments with reference to his deficiencies.

Preliminary Examination—Not later than one school year before his final examination, each candidate for the degree of Doctor of

Philosophy must submit to a preliminary examination. This examination may be waived, however, in the case of a candidate who has taken his Master's degree in this University.

Thesis—On completion of his studies, the candidate must present an acceptable thesis. The thesis, prepared upon a topic that has been approved by the professor in charge of the major subject, must show evidence of scholarly research. It must be typewritten, paged, and bound according to a prescribed form, which may be seen in the University library. It must be submitted to the professor in charge of the major subject at least two months before the intended graduation of the candidate. When it has been approved by the examining committee, it will be placed in the Chancellor's office, where, during a period of not less than two weeks, it will be available for inspection by members of the faculty. A public defense of the thesis may be required of the candidate. After the thesis has been finally approved, the candidate must file an original and a duplicate typewritten copy of it with the librarian. The original copy of the thesis so filed may not be loaned, or pass from the custody of the librarian under any circumstances or pretext whatsoever. It is also required of the candidate that he have printed and deposited in the library of the University one hundred copies of his thesis, to be subject to the control of the librarian and the head of the department concerned. All theses and printed copies thereof must be provided with a cover and a title page lettered in a form prescribed by the librarian. The degree, however, may be conferred before the thesis is printed, provided a security bond be furnished and filed with the Secretary of the Board of Regents. The amount of this bond is to be named by the librarian, and any term of extension will be fixed jointly by the librarian and the Dean of the Graduate College.

Final Examination—After the thesis of the candidate has been accepted by the examining committee, he must pass a public examination in the subject offered for his degree. This examination is held before an examining committee of not less than three members, including the professors in charge of the major and minor subjects, supplemented if necessary by appointment from the graduate faculty.

REQUIREMENTS FOR THE DEGREE OF MASTER OF ARTS

Candidacy for the degree of Master of Arts[1] can in no case be completed in less than a year of resident graduate study. On completion

[1]The degree of Master of Science may be substituted for the degree of Master of Arts, on application, by candidates who have pursued approved courses in Theoretical or Applied Science.

of this study, the candidate must pass a public examination, and present an acceptable thesis, based upon some topic connected with his major subject.

Examination—After finishing his studies, each candidate must pass a public examination in the subjects offered for the Master's degree. By concession, a student unable to complete his candidacy in a single residence at the University may be examined in his major and minor studies separately on completion of either. The examination is conducted by a committee composed of the professors in charge of the major and minor subjects, and some member of the Graduate Council. If but a single subject is offered, an additional examiner is appointed from the Graduate Faculty.

Thesis—Each candidate for the degree of Master of Arts must present a thesis embodying, in connection with his major subject, the results of research, or the scholarly treatment of some topic. It must be typewritten, paged, and bound according to a prescribed form, which may be seen in the library of the University. It must be submitted for examination at least two weeks before the intended graduation of the candidate. After being approved and accepted, the thesis becomes the property of the University and is placed on file in the University library.

FELLOWSHIPS AND SCHOLARSHIPS

Fellowships and Scholarships, established in the different departments of the University, are available to students registered in the Graduate College. Fees are remitted to Fellows and Scholars for courses listed in the Graduate College only. Fees will be required for all undergraduate laboratory work. These positions are awarded to students recommended by the respective heads of departments. They are not gifts or benefactions from the State, but are means whereby services are rendered to the University and at the same time the holder is assisted in some special line of work. The instruction required of Fellows and Scholars is confined to the department in which they are pursuing advanced work. For additional information see the announcement of the various colleges.

The
Graduate School of Education
In the Graduate College

OFFICERS OF ADMINISTRATION AND INSTRUCTION

[1]SAMUEL AVERY, Ph. D., LL. D., Chancellor of the University.

WILLIAM GRANGER HASTINGS, A. B., Acting Chancellor of the University.

LUCIUS ADELNO SHERMAN, Ph. D., LL. D., Dean of the Graduate College and Professor of English Language and Literature. *(Head of Department of English Language and Literature.)*

GEORGE WASHINGTON ANDREW LUCKEY, Ph. D., Dean of the Graduate School of Education and Professor of Education. *(Head of Department of Education.)*

FLORENCE IRWIN McGAHEY, A. B., Registrar and University Publisher. *(Secretary of the Faculties.)*

HARTLEY BURR ALEXANDER, Ph. D., Professor of Philosophy.

GROVE ETTINGER BARBER, A. M., Professor of Roman History and Literature. *(Head of Department of Roman History and Literature.)*

ERWIN HINCKLEY BARBOUR, Ph. D., Professor of Geology. *(Head of Department of Geology.)*

WILLIAM CHARLES BRENKE, Ph. D., Professor of Mathematics.

LAWRENCE BRUNER, B. Sc., Professor of Entomology and Entomologist of the Experiment Station. *(Head of Department of Entomology.)*

WILLIAM WESLEY BURR, B. Sc., Professor of Agronomy. *(Head of Department of Agronomy.)*

HOWARD WALTER CALDWELL, A. M., Professor of American History. *(Head of Department of American History.)*

ALBERT LUTHER CANDY, Ph. D., Professor of Mathematics. *(Head of Department of Mathematics.)*

GEORGE RICHARD CHATBURN, A. M., C. E., Professor of Applied Mechanics and Machine Design. *(Head of Department of Applied Mechanics and Machine Design.)*

GEORGE EVERT CONDRA, Ph. D., Professor of Geography and Conservation. *(Head of Department of Geography and Conservation.)*

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[1]Absent on leave from February 1 to September 1, 1918, in war service.

CLARA CONKLIN, A. M., Professor of Romance Languages and Literatures. *(Head of Department of Romance Languages and Literatures.)*

[2]BENTON DALES, Ph. D., Professor of Chemistry. *(Head of Department of Chemistry.)*

WILLIAM FRANCIS DANN, A. M., Professor of History and Criticism of the Fine Arts. *(Head of Department of History and Criticism of the Fine Arts.)*

[1]ELLERY WILLIAMS DAVIS, Ph. D., Dean of the College of Arts and Sciences and Professor of Mathematics. *(Head of Department of Mathematics.)*

CARL CHRISTIAN ENGBERG, Ph. D., Executive Dean and Professor of Applied Mathematics.

FRED MORROW FLING, Ph. D., Professor of European History. *(Head of Department of European History.)*

MILLER MOORE FOGG, A. M., Professor of Rhetoric, in charge of Debate and Newspaper Writing.

CHARLES FORDYCE, Ph. D., Dean of the Teachers College and Professor of Educational Theory and Practice. *(Head of Department of Educational Theory and Practice.)*

LAURENCE FOSSLER, A. M., Professor of Germanic Languages and Literatures. *(Head of Department of Germanic Languages and Literatures.)*

PROSSER HALL FRYE, A. B., Professor of Rhetoric. *(Head of Department of Rhetoric.)*

PAUL HENRY GRUMMANN, A. M., Director of the School of Fine Arts and Professor of Modern German Literature.

GEORGE ELLIOTT HOWARD, Ph. D., Professor of Political Science and Sociology. *(Head of Department of Political Science and Sociology.)*

GUERNSEY JONES, Ph. D., Professor of English History. *(Head of Department of English History.)*

JAMES THOMAS LEES, Ph. D., Professor of Greek History and Literature. *(Head of Department of Greek History and Literature.)*

JAMES EDWARD LE ROSSIGNOL, Ph. D., Director of the School of Commerce and Professor of Economics and Commerce. *(Head of Department of Economics and Commerce.)*

RUFUS ASHLEY LYMAN, A. M., M. D., Professor of Physiology and Pharmacology and Dean of the College of Pharmacy. *(Head of Department of Physiology and Pharmacology.)*

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[2]Resigned.
[1]Deceased.

RAYMOND JOHN POOL, Ph. D., Professor of Botany. *(Head of Department of Botany.)*

FREDERICK WARREN SANFORD, A. B., Associate Professor of Roman History and Literature.

CLARENCE AURELIUS SKINNER, Ph. D., Professor of Physics. *(Head of Department of Physics.)*

OSCAR VAN PELT STOUT, C. E., Dean of College of Engineering and Professor of Civil Engineering. On leave. Major in the Engineering Officers' Reserve Corps. *(Head of Department of Civil Engineering.)*

FREDERICK AMES STUFF, A. M., Litt. D., Professor of English Language and Literature.

GOODWIN DE LOSS SWEZEY, A. M., Professor of Astronomy. *(Head of Department of Astronomy.)*

GEORGE OLIEN VIRTUE, Ph. D., Professor of Economics and Commerce.

HERBERT HAROLD WAITE, A. M., M. D., Professor of Bacteriology and Pathology. *(Head of Department of Bacteriology and Pathology.)*

EDWIN MEAD WILCOX, Ph. D., Professor of Plant Pathology and Physiology and Plant Pathologist of the Experiment Station. *(Head of Department of Plant Pathology and Physiology.)*

ROBERT HENRY WOLCOTT, A. M., M. D., Professor of Zoology. *(Head of Department of Zoology.)*

HARRY KIRKE WOLFE, Ph. D., Professor of Philosophy. *(Head of Department of Philosophy.)*

Standing Committees

Course of Study—Professors Wolfe *(Chairman)*, Fossler, Fling, Fordyce, Pool, Sanford, Skinner, Stuff, Virtue.

Graduate Teachers' Diploma—Professors Caldwell *(Chairman)*, Barbour, Chatburn, Dales, Brenke, and the Registrar.

Advisory and Teachers' Employment—Dean Luckey, Professor Reed, and the Professor concerned with the student's graduate major subject.

Nominations—The Chancellor, Deans Luckey, Sherman.

THE GRADUATE SCHOOL OF EDUCATION

Organization—The Department of Education for the professional training of secondary teachers was established in 1895. Prior to that, courses in education had been offered by the Department of Philosophy. From the first, work in the Department of Education, except in the case of experienced teachers, was limited to students of junior, senior, or graduate rank. In 1908 the Teachers College and the new Department of Educational Theory and Practice were established, both, as in the Department of Education, covering work of the last two years of the college course, or an additional graduate year. Since 1897 many departments concerned with subjects taught in the high schools have offered graduate courses for the better preparation of teachers. In the spring of 1914 this individual effort in the training of teachers thru graduate study was organized into the Graduate School of Education.

Purpose—The Graduate School of Education is designed to meet three important needs: A stronger and more effective body of teachers; better educational material and more progressive scholarship; more healthful school conditions, better standards of measurement and more inspiring methods of instruction. It is, therefore, the purpose of the school, first, thru organized and directed graduate study to prepare (a) efficient teachers for the best high schools, normal schools, and colleges, (b) school administrators, principals, and superintendents, (c) experts in social welfare and teachers of special subjects; second, to organize and direct graduate study in education, to promote research and to stimulate investigation of the present practices of school and society; third, to furnish a laboratory or workshop in which disciplined schoolmen can unite with graduate students in working out the difficult problems of school administration and instruction.

Requirements—The Graduate School of Education is open only to graduate students who have met the conditions of registration in the Graduate College. To obtain the graduate teachers' diploma the student must have received the master's or doctor's degree from the Graduate College in this institution. The major, or major and minors, leading to the above degrees are departmental functions and may be elected at will by the student. The major for the master's degree, in most departments, covers about twelve semestral hours (sixteen in Education) of graduate study plus a thesis showing original investigation; the minor varies from eight to twelve semestral hours of classroom work. In addition to the major, or major and minor, which represent the subjects the student is preparing to teach, there are

eighteen semestral hours of graduate courses in education and psychology, twelve in the former and six in the latter. Students who have not had experience in teaching are required to obtain credit for observation and practice-teaching in the University. Courses one, two, seven, twenty or twenty-one in Education and one and two in Philosophy as offered in this University are prerequisites to the above professional requirements. The only fixed requirements are four semestral hours in adolescence, two in graduate theory and practice, and four in graduate experimental psychology. The additional requirements may be elected from courses 5-6, 8-14, 24-26, and 36 or the student may elect two hours from graduate courses on methods of teaching his major subject under the advice of the professor of theory and practice.

Graduate Teachers' Diploma—The graduate teachers' diploma is conferred on those who, thru graduate study, have shown productive scholarship and special fitness for teaching in all departments of elementary and high schools, normal schools, and colleges. It is the highest recommendation offered by the University to the teaching profession, and covers only the subject or subjects that the student, thru at least a year of graduate study, is specially prepared to teach. The diploma is accredited in most of the states as sufficient credential upon which to base teachers' certificates.

To obtain the graduate teachers' diploma one must have fulfilled the requirements as outlined above which include the minimum requirement for the graduate major or minor. The graduate major or minor for the master's degree requires for the former twenty-four semester hours of graduate credit plus an approved thesis, sixteen in Education and eight in Philosophy (Psychology) of which at least eight hours must be under the immediate direction of the major or minor professor and at least six hours must be under the direction of the professor of philosophy (psychology). The graduate minor in education for the master's degree requires eighteen graduate semester hours, twelve in education (at least eight of which must be in one department), and six in philosophy (psychology). This may be accomplished in one year of graduate study—four summer sessions—by persons who are specially fitted for graduate study and who continue with their strongest interests, others may require a year and a summer session, or even two years. The master's or doctor's degree must precede or be granted along with the graduate teachers' diploma. The latter is based on one year of graduate study of not less than thirty semestral hours of credit. The time required to accomplish a given end depends largely on the preparation and ability of the student and the nature and importance of his subject. Much depends on the judg-

ment of the student in selecting a major. Every subject has its value and its difficulties, some more than others. Most students will major in the academic subject they expect to teach, making education a minor. Only those students who are preparing to teach education in normal school or college are encouraged to major in that subject. Where graduate students are employed to assist the professors in class-work and conferences they obtain the most valuable practice-teaching. Most graduate departments have scholarships and fellowships open to properly prepared students in which the above assistance can be rendered.

Graduate students, not candidates for degrees or diplomas, will find in the Graduate School of Education excellent opportunity to renew their youth and increase their teaching-efficiency by profitable advanced study.

Courses of Instruction—The graduate courses of instruction leading to advanced degrees and the graduate teachers' diplomas are usually so designated and scheduled in the different departments under the general heading "Courses of Instruction." When not so designated in the announcement the student, thru the advice of his major professor, will have little difficulty in selecting appropriate academic courses fulfilling the major or minor requirements for advanced degrees, including the graduate teachers' diploma. In most departments graduate work is conditioned on previous undergraduate preparation in the same subject. To illustrate: "Students in the Graduate School of Education who elect a major in Botany must have had courses 1 and 2 (or their equivalent). They are recommended to take courses 3 and 4 and in addition courses 13 and 14, 33 and 34, 20 and Plant Pathology and Physiology 105."

The professional requirements for the graduate teachers' diploma may be met from courses 5-18, 27-29, and 36 in Education, a teachers' course in the major subject, and courses 11-16 in Philosophy.

Fees—There are no extra fees for enrolling in the Graduate School of Education, other than those required in the Graduate College. There is, however, a fee of two dollars for the graduate teachers' diploma.

Courses and Instruction

Offered by the Departments of the Graduate College

AGRICULTURAL ENGINEERING

Professor Chase *(Head of Department)*, *Professor Seaton, Associate Professor Brackett, Assistant Professor Baer, Assistant Professor Sjogren, Mr. Runnalls

COURSES

5. **Rural Architecture**—The arrangement of farm buildings and the farmstead, preparation of plans for unimproved farms and for rearrangement and additions to buildings on improved farms. Design and production of working drawings for the various farm structures. Design of beams and columns, method of construction and use of materials in timber, masonry and reinforced concrete work. Engineers. Two hours attendance. Four hours preparation. Three hours drawing. Three hours credit. First semester. Sjogren

6. **Irrigation and Drainage Engineering (C. E. 12)**—Sources of water supply, canals, seepage, irrigation by pumping, surveys and designs, legal and economic principles. Drainage: Field and class work in land drainage, surveys and preparation of plans and estimates of excavation, material and labor costs, study of drainage laws. Advanced engineers only. Three hours attendance. Six hours preparation. Three hours drawing. Four hours credit. Second semester. Stout, Sjogren

7. **Rural Architecture**—The arrangement, design and construction of farm buildings with special emphasis on planning the home, the farmstead, horse barns, dairy buildings, barns and yards, hog houses, granaries, soils, machine sheds, ice houses, fences, etc. For advanced students other than engineers. Two hours attendance. Two hours preparation. Six hours field work and drawing. Three hours credit. First semester. Chase

8. **Irrigation, Drainage and Rural Highways**—Irrigation from the water user's standpoint, requirements for different crops, source of supply, canals, seepage, pumping irrigation. Drainage: Study of different systems and methods of installation,—practice in the use of surveying instruments both in drainage and general field work. Rural highways, road laws and the construction and maintenance of roads. Advanced students other than engineers. Prerequisite: Agronomy 51. Two hours attendance. Two hours preparation. Five hours field work and drawing. Three hours credit. Sjogren

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* Temporarily acting head of department of Mechanical Engineering.

9. **Advanced Farm Machinery**—Laboratory work in the testing of field machines under various conditions. The testing of grinders, shellers, twine, etc. Prerequisite: Courses 3 and 24. Six hours laboratory. Two hours credit. First semester. Brackett

10. **Advanced Farm Motors**—The construction of motor testing apparatus and the complete tests of farm motors, both in the field and laboratory. Prerequisite: Courses 4 or M. E. 10 and in connection with M. E. 16. Six hours laboratory. Two hours credit. Second semester. Brackett

11. **Domestic Engineering**—Studies in illumination and illuminating materials, freezing and heating materials, ventilating systems, water systems, sewerage and sewage disposal plants. Prerequisite: Physics 1 and 2 or 11 and 12; Chemistry 1 and 2. Three hours attendance. Six hours preparation. Three hours credit. Chase

12. **Domestic Engineering Laboratory**—Practice in plumbing, testing of fuels, heating systems, illuminating systems, ventilating systems, pumping systems, etc. Prerequisite: Course 11 or by permission. Six hours laboratory. Two hours credit. Chase, Sjogren

19. **Research Work in Rural Architecture, Farm Drainage and Rural Highways**—There is a broad field for original investigation in the following subjects; drainage, water supplies, lighting, heating, building materials, efficiency gained by proper arrangement of farm buildings, road construction and sewerage. Prerequisite: Courses 5 and 6 or 7 and 8. Six to fifteen hours laboratory or reading. Two to five hours credit. Chase, Baer, Sjogren

20. **Research Work in Farm Machinery, Farm Motors and Farm Equipment**—The large equipment of machinery in the department gives an excellent opportunity for testing both in the laboratory and in the field, standardizing, traction tests, calibration and economic tests of both farm machinery and farm motors. Prerequisite: Courses 3 and 4. Six to fifteen hours laboratory or reading. Two to five hours credit. Chase, Brackett

AGRONOMY

Professor Burr *(Head of Department)*, Professor Kiesselbach (Experimental), Professor Hopt, Associate Professor Gaddis, Assistant Professor Keim, Mr. Anderson and Assistants

COURSES

Seminar

101. **Agronomy Seminar**—Presentation and discussion of various agronomic subjects. Reviews of the latest and most important litera-

ture and data in agronomy. One hour attendance. One hour credit. Prerequisite: Courses 1, 2, 51 and 52. Open to juniors, seniors and graduates. First semester.

102. **Agronomy Seminar**—Course 101 continued. Second semester.

Experimentation

Students taking any of the following courses must have completed all general courses in Agronomy and Farm Management.

301. **Investigation**—Satisfactory work on some special line of investigation with assigned readings. Six to twenty hours laboratory. Thesis required. Two to five hours credit. First semester.
Kiesselbach

302. **Investigation**—Course 301 continued. Second semester.

303. **Methods of Investigation**—Compilation of experimental data. Correlation tables. Statistical methods. Six to twenty hours laboratory. Two to five hours credit. Kiesselbach

304. **Methods of Investigation**—Course 303 continued. Second semester.

AMERICAN HISTORY

Professor Caldwell *(Head of Department)*, Professor Persinger, Professor Maxey, Miss Barns, Mr. Cochran, Miss Reynoldson, Mr. Sheldon

Objects—Graduate work in the department of American history affords opportunity to prepare for any one of the following four lines of work: (1) The teaching of American history in the best high schools of Nebraska and adjoining states, and in seminaries, academies and smaller colleges. (2) Fellowships or instructorships in the older and larger universities. (3) Investigational work in corporate, state or national service. (4) Historical research and writing.

Time—From one to three (or more) years may be given to this preparation, under the direct advice and assistance of the instructors in the department, and culminating in the degrees of Master of Arts and Doctor of Philosophy. There are also exceptional opportunities for study in the collateral subjects of English and European history, political science and sociology, and economics and commerce.

Facilities—The University, State and State Historical Society libraries afford a wide range of original material for work along many

lines of historical investigation. Graduate students have free access to all these libraries, and in addition have for their use a seminary room in which are placed all books needed in their particular lines of research. Books not already on the shelves will be purchased or obtained from other libraries when necessary for thesis or other advanced work. Special seminary courses are offered; and investigation in the history of Nebraska and other states of the plains region will be undertaken and the results published from time to time.

General Requirements—Candidates for advanced degrees must present a good knowledge of general history, and at least 12 hours of American history above high school courses. Unless this amount of undergraduate preparation is actually presented, candidates for the Master's or Doctor's degree in this department should count on at least one full semester more of work than would otherwise be required for either degree.

Requirements for Master of Arts—Work for the Master's degree may be taken in the department as follows: (1) All the work for the degree, including the thesis, in the department. The minimum requirement is one full year's work, including a satisfactory thesis. (2) A major, sixty per cent, and the thesis in this department, and the remainder in either one or two other departments. (3) A double minor, forty per cent, or a single minor, twenty per cent, in this department, and a major and the thesis in some other department. In any case, the particular courses to be taken are arranged by the candidate and his instructors in such manner as to conform to the plans and preparation of each applicant.

Requirements for Doctor of Philosophy—The minimum for the degree of Doctor of Philosophy is three full years of graduate work, including the presentation of a satisfactory thesis. The work must be taken in at least two departments and may include three. For a major, sixty per cent of the time must be given to this department; for a double minor, forty per cent; and for a single minor, twenty per cent. The thesis in all cases goes with the major. The particular courses to be pursued are arranged on consultation between the candidate and the heads of the departments in which the work is to be taken. Those taking a major in this department are expected to have a good general knowledge of European history and a fair acquaintance with the principles of political economy, public law, political science and sociology. The thesis must show a reasonable degree of original research and independent treatment.

COURSES

5. **Reconstruction and Industrial Movements, 1865-1892**—Open to those who have had 3 and 4, to juniors, seniors and graduate students. Three hours attendance. Three hours credit. First semester.

Caldwell

6. **American History Since 1893**—Open to those who have had 5, and to juniors, seniors and graduate students. Three hours attendance. Three hours credit. Second semester. Persinger

7. **British Colonial Policy**—Open to those who have had course 2 and to juniors, seniors and graduate students. Two hours attendance. Two hours credit. First and second semesters. ———

11. **Teachers' Course in American History**—Review and organization of the subject matter of high school American history from 1492 to 1823; methods of high school history teaching; equipment, aids, etc. Five hours attendance. One to one and one-half hours preparation for each recitation. Three to four hours credit. First semester. Persinger.

12. **Teachers' Course in American History**—Course 11 continued. Subject matter of American history from 1824 to present time. Three to four hours credit. Second semester. Persinger

16. **Constitutional History of the United States**—Evolution, formation, adoption and interpretation of the constitution. Open to law students and to juniors, seniors and graduate students. Three hours attendance. Three hours credit. Second semester. Cochran

21. **Advanced Course on American and Nebraska History of 1909 to 1917**—Open to juniors, seniors and graduate students. Semi-research course on national and correlated state history of the populist and free-silver period. Two hours attendance. Two hours credit. First semester. Persinger

21a. **Advanced Course, 1909-1917**—Course 21 continued. Two hours credit. Second semester. Persinger

22. **American Diplomacy** [Public Law 10]—Organization of Department of State and diplomatic service. Methods. Problems and controversies growing out of them. Change in our diplomatic policy. Two hours attendance. Two hours credit. Second semester. Maxey

23. **Seminary**—For graduate students and special students who may be admitted to the course by the instructor. Study of library organization, bibliography, and methods of research. Reports on thesis and assigned topics, and lectures by invited specialists. Two hours attendance. Credit will vary with the amount and character of work done. Caldwell

24. **Seminary**—Course 23 continued. Second semester.

25. **Expansion of the American Nation and People**—Territorial acquisitions, treaties, problems, effects; westward movements—the fron-

t'ers; changes in and development of an American people; characteristics. An advanced course open to juniors, seniors and graduate students. Thesis work and study in the sources will be emphasized. Three hours attendance. Three hours credit. First semester.

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26. **The Negro Problem Under Slavery and Freedom, 1600-1915**—The history of the negro race in the United States; slavery—its development and problems. Emancipation and the negro under freedom; present conditions and problems. An advanced course open to those who have had courses 1 and 2 and to juniors, seniors and graduate students. Three hours attendance. Three hours credit. Second semester. Caldwell

33a. **Seminary on Nebraska History, Politics and Economics**—a research seminar in the history, political science, sociology and economics of Nebraska. Open to juniors, seniors and graduate students. Thru the Nebraska Legislative Reference Bureau scholarships of one hundred dollars and up will be awarded to members of this course whose merits justify it, or whose research papers prove to be usable by the Bureau. Two hours attendance. Two hours credit. First semester. Caldwell, Sheldon

34a. **Seminary on Nebraska History, Politics and Economics**—Course 33a continued. Second semester.

37. **Graduate Conference**—Meeting of professors, fellows, scholars and graduate majors for discussion of professional or technical subjects, book reviews, methods, etc. No credit. First semester.

38. **Graduate Conference**—Course 37 continued. Second semester.

APPLIED MECHANICS AND MACHINE DESIGN

Professor Chatburn *(Head of Department)*, Professor Slaymaker, Associate Professor Rasmusen, Associate Professor Mickey

COURSES

5. **Machine Design**—Elementary design of shafting and shaft couplings, pulleys and fly-wheel, power-screws, bearings and guides. Nine hours attendance and drawing. Prerequisite: Courses 1, 2, 3 and 14. Three hours credit. First semester. Slaymaker

6. **Machine Design**—Each student makes a number of complete designs, studies constructive details, makes calculations to determine strength of parts and estimates cost. Nine hours attendance and drawing. Prerequisite: Course 5. Three hours credit. Second semester. Slaymaker

8. **Steam Engine Design**—Working from an assumed indicator card, each student designs the principal dimensions of a high-speed automatic cut-off engine and the details of assigned parts. Reports upon each particular design. Six hours drawing a week. Prerequisite: Course 5. Two hours credit. Second semester. Slaymaker

13. **Stereotomy**—Descriptive geometry applied to problems in stone cutting and the necessary patterns, bevels and developments, and to the designing of forms for the manufacture of artificial stones. A study of the shapes of stones in structure having plane, curved and warped surfaces, as used in architectural engineering and military operations. Prerequisite: Courses 1 and 2. Six hours drawing and laboratory. Two hours credit. First and second semesters. Chatburn

14. **Theoretical and Applied Mechanics**—Principles of kinematics, statics and kinetics. Prerequisite: Mathematics 3. Three hours attendance. Six hours preparation. Three hours credit. First and second semesters. Chatburn, Mickey

15. **Mechanics of Materials**—Resistance of materials, including reinforced concrete; mechanics of beams, columns, shafts, etc.; laboratory experiments. Prerequisite: Course 14. Three hours attendance. Six hours laboratory. Six hours preparation. Five hours credit. First semester. Chatburn, Mickey

16. **Mechanics of Materials**—Course 15 abbreviated for students in the Agricultural, Electrical and Mechanical Engineering groups. Prerequisite: Course 14. Two hours attendance. Three hours laboratory. Four hours preparation. Three hours credit. First and second semesters. Chatburn, Mickey

17. **Cement and Concrete Testing** — Classification, composition, manufacture, inspection, sampling and specifications. Practical testing of cement, mortars, concretes and other materials of construction. Prerequisite: Course 14. One hour attendance. Three hours laboratory. Two hours preparation. Two hours credit. First and second semesters. Mickey

18. **Materials of Construction**—Manufacture and general properties. Mechanical properties of materials as revealed by actual tests. Comparison of tests reported by other laboratories. Continuation of tests begun in course 17. One hour attendance. Three hours laboratory. Two hours preparation. Two hours credit. Second semester. Chatburn, Mickey

22. **Graphic Statics**—Elements of graphic statics applied to engineering construction. Prerequisite: Course 14. One hour attendance. Six hours drawing. Two hours preparation. Three hours credit. Second semester. Chatburn, Rasmusen

23. **Applied Descriptive Geometry**—Advanced course in mechanical drawing. Practical applications of the principles of descriptive geometry. Shades, shadows and perspective; tinting and stippling. Prerequisites: Courses 1 and 2. Three, six or nine hours drawing a week. One, two or three hours credit. First and second semesters.
Rasmusen

25. **Road Materials Testing**—Examination, classification and testing of road and pavement materials including rock, gravel, sand, clay, earth, paving brick, wood block, stone blocks, oils, asphalts and tars, The testing of cement concrete, bituminous concrete and sheet asphalt. The building of a miniature road or pavement model illustrating the successive steps of construction, as well as the finished road or pavement. Prerequisite or parallel: Course 14, and C. E. 21. One hour attendance and two hours preparation. Three hours laboratory. Two hours credit. Additional credit may be earned by special arrangement. First and second semesters. Mickey

26. **Road Materials Testing**—Course 25 continued. Six hours laboratory. Two hours credit. First and second semesters. Mickey

27. **Specifications and Working Drawings**—The growth, cutting, seasoning, working and finishing of woods; structural and decorative properties; detailing on a large scale various parts, such as walls, roofs, cornices, doors, windows, stairs, etc. Plans, elevations and details of small dwelling houses; specifications and estimate of cost. Two hours lecture. Four hours preparation. Six hours drawing. Four hours credit. First semester. Slaymaker

28. **Specifications and Working Drawings**—Foundations of stone, brick, concrete and piles; kinds of masonry and external finish; brick-masonry, its materials and bonds; terra-cotta design, etc. Detailing of columns, beams, girders and footings; joints and connections; use of architectural handbooks. Two hours lecture. Four hours preparation. Six hours drawing. Four hour credit. Second semester.
Slaymaker

29. **Engineering Freehand Drawing**—A course specially planned to meet the needs of students in Engineering and Physics. Elementary principles of perspective and object drawing. Two hours studio. One hour credit.

30a. **Perspective**—Geometrical construction, principles of mechanical drawing, projection and isometric drawing. One hour attendance. Five hours drawing. Two hours credit. Rasmusen

31a. **Perspective**—Course 30a continued. Elements of descriptive geometry, theory of perspective, shades and shadows. Prerequisite: Course 30a. One hour attendance. Five hours drawing. Two hours credit. Rasmusen

32a. **Perspective**—Course 31a continued. One hour attendance. Five hours drawing. Two hours credit. Rasmusen

34. **Advanced Mechanics**—Open to students who have completed course 14 or Mathematics 4. Three hours attendance. Six hours preparation. Three hours credit. Second semester. Chatburn

400. **Thesis**—Open to approved seniors. Three to five hours credit.

ASTRONOMY

Professor Swezey *(Head of Department)*, Professor Loveland, Professor Brenke

The Astronomical Observatory with its telescope and other instruments furnishes to elementary students an opportunity to study at first hand the more interesting heavenly bodies. They are given some practice in such exercises as finding accurate time by the stars, determining the latitude of the Observatory, and recognizing with the spectroscope the various elements present in the sun and stars. For advanced work the telescope is equipped with photographic, photometric and spectroscopic appliances; the meridian circle, zenith telescope, transit instrument and sidereal clock and chronometers furnish facilities for the more important problems in the astronomy of precision.

The location on the campus of the United States Weather Bureau with its self-registering instruments and its daily compiling and printing of a weather map add much interest to the study of meteorology. A complete series of the daily weather maps for many years furnish original data for all sorts of climatological studies.

Master of Arts—Any of the courses offered to graduates and comprising six hours credit may constitute a minor for a student who takes two minors for his degree. Any two such courses may be taken as a single minor. Two such courses and a thesis constitute a major.

Doctor of Philosophy—The department does not undertake major work for this degree, but the courses offered for the degree of Master of Arts may be chosen as minors by candidates for the doctorate taking their majors in other departments.

COURSES

9. **The History of Astronomy**—With especial reference to recent and current investigations in the field of astronomy. A knowledge of general astronomy prerequisite. Two or three hours credit. First semester. Swezey

10. **The History of Astronomy**—Course 9 continued. Second semester.

13. **Timekeeping**—The use of the transit instrument in finding accurate time. The comparison and regulation of sidereal and mean-time clocks and chronometers. Designed incidentally to fit the student to regulate the time service to the observatory. One to two hours credit. First and second semesters. Swezey

14. **The Problem of Latitude**—The use of the meridian circle and the zenith telescope in the accurate determination of latitude, and similar problems. One or two hours credit. First and second semesters.

21. **Celestial Mechanics**—Requires the calculus. Three hours attendance. Three hours credit. First semester. Brenke

22. **Celestial Mechanics**—Course 21 continued. Second semester.

BACTERIOLOGY AND PATHOLOGY

Professor Waite *(Head of Department)*, Mr. Proskovec

As requirements for registration in this department for advanced degrees, the applicant must have completed work equivalent to that of a general scientific course in this University. The ability to read German and French is necessary. Before registration for an advanced degree the candidate must consult the head of the department.

Master of Arts—Second minor: Courses 2a and 3, or 2a and 4. First minor: Courses 2a and 3, or 2a and 4 and its equivalent along some special line of research. Major: Advanced work following the courses outlined above with a thesis.

Doctor of Philosophy—Minors: The minimum requirement will be the equivalent of six hours of class work approved by the head of the department. Major: The candidate must have a thoro knowledge of general bacteriology equivalent to that required for the degree of Master of Arts. In addition to this he must have pursued and completed some original problem and must embody the results of his work in a thesis. The minimum time requirement must be at least that required by the University for the degree.

COURSES

2a. **Elementary Bacteriology**—An introduction to the study of bacteriology. The relation of bacteria to other organisms. Their morphology and structure, chemical composition and chemical changes which they produce. Two hours attendance. Four hours laboratory. Two hours credit. First and second semesters. Waite, Proskovec

Courses 3 and 4 must be preceded by course 2a.

3. **Dairy Bacteriology**—Sources of bacteria in milk. Lactic and butyric acid fermentations, peptonizing, rennet-forming and butyric

acid-producing bacteria. Abnormal fermentations giving rise to slimy, bitter, red, blue, yellow and green milk. Relation of milk to spread of tuberculosis, typhoid fever, and other disease. Sterilization and pasteurization. Bacteria in butter making. Microörganisms concerned in the production of cheese. Two hours attendance. Four hours laboratory. Two hours credit. First semester.

Waite, Proskovec

4. **Agricultural Bacteriology**—The nitrogen problem. Bacteria in ammoniacal fermentation, nitrification and denitrification. Bacteria as a means of reclaiming nitrogen lost from the soil. The employment of pure cultures in growing leguminous plants. Azotobacteria. Two hours attendance. Four hours laboratory. Two hours credit. Second semester. Waite, Proskovec

BOTANY

Professor Pool *(Head of Department)*, Professor Weaver, Associate Professor E. R. Walker, Associate Professor L. B. Walker, Instructor Hannah, Mr. Fitzpatrick

The department of botany now occupies new quarters in Bessey Hall which has been completed and equipped recently. Class rooms, well equipped store rooms and laboratories for elementary botany and undergraduate and graduate work in morphology, histology, cytology, taxonomy, ecology and mycology afford ample opportunity for extensive training in these phases of botanical science. The equipment is adequate for a wide range of investigations in the various subdivisions of the subject. Greenhouses afford the necessary quarters for the culture of living plants to be used in the various courses as well as space for the use of research students.

The University Herbarium and the Herbarium of the Botanical Survey of Nebraska are again available after several years in storage because of the lack of room in the old building. The collections, now numbering 250,000 specimens are housed in new metal cases adjacent to the laboratory of systematic botany. The flora of nearly every civilized land is represented in these collections which contain a great amount of material available for careful taxonomic research. Many of the important exsiccati of the world are to be found here. Two of the important private collections which are now the property of the university are the Williams Collection of lichens consisting of 3,819 mounted specimens and the general herbarium of the late William Cleburne of Omaha numbering about 6,000 specimens.

The botanical library of some 15,000 books, pamphlets and separates is also conveniently housed in the building in new standard metal equipment. The most of the important American and European

botanical periodicals are represented here by complete sets of bound volumes and in the current files.

The Botanical Seminar holds open meetings every two weeks for the reading of papers and discussion of botanical questions. To these meetings all students are welcome. Membership in the Seminar is restricted to advanced students of Botany who after invitation succeed in passing the entrance examinations set for them.

Before formal registration for a degree for graduate work in this department the student must have satisfactorily completed general botany (courses 1, 2), general morphology (courses 3 and 4), and plant physiology (course 20 and Plant Pathology and Physiology 105) or their equivalent (20 hours), and one year of zoology.

After consultation students may register for the following courses:

Master of Arts—For majors candidates may select work in cytology, histology, systematic botany, mycology and ecology, preferably in courses 37 to 46. For minors any courses excepting 1, 2, 3, 4, A, 20, 33, 34 and Plant Pathology and Physiology 105.

Doctor of Philosophy—Majors: Courses 37 to 46. Minors: Any courses which the student is prepared to enter (excepting 1, 2, 3, 4, A, 20, 33, 34 and Plant Pathology and Physiology 105).

Students in the Graduate School of Education who elect a major in Botany must have had courses 1 and 2 (or their equivalent). They are recommended to take courses 3 and 4, and in addition courses 13 and 14, 33 and 34, 20 and Plant Pathology and Physiology 105.

A number of scholarships and fellowships in Botany are available in the Graduate College for properly equipped students who wish to enter upon graduate work in Botany. Information relative to these positions may be secured from the Dean of the Graduate College or from the head of this department.

COURSES

I. Histological Botany

5. **Histology**—A study of the origin and development of tissues and tissue aggregates in higher plants, with the technique of staining and mounting extended to apply to all of the major groups of plants. Should be preceded by courses 1 and 2. Two hours lecture. Four to eight hours laboratory. Two to three hours credit. First semester.
E. R. Walker

6. **Cytology**—A study of the plant cell, mitosis and sporogenesis in higher plants with cytological technique with reference to the mechanism of inheritance. Must be preceded by 1, 2 or their equivalent. Two hours lecture. Four to eight hours laboratory. Two to three hours credit. Second semester. E. R. Walker

II. Systematic Botany

11. **Trees**—A review of the morphology and physiology of trees followed by work on the identification and classification of trees together with a study of the distribution of the more important forest trees of the United States. Emphasis is placed upon methods for identification. Two hours lecture or quiz. Four to six hours work in the laboratory, herbarium or field. Two to three hours credit. First semester. Pool

12. **Trees**—Course 11 continued. Including a study of the structure of the more common economic woods leading to their identification; the relation of structure to strength, weight, shrinkage, grain, finish and other properties. These courses are designed to furnish teachers and others with a general knowledge of trees and woods which may be useful in practical daily life. Two hours lecture or quiz. Four to six hours work in the laboratory, herbarium or field. Prerequisite: Course 11. Two to three hours credit. Second semester. Pool

13. **Flowering Plants**—The principles of the classification of the flowering plants and their application to the orders of the Monocotyledons. Particular attention is given to grasses and other economic groups. Two hours lecture and quiz. Four to ten hours work in the laboratory, herbarium and field. Two to four hours credit. First semester. Pool, Hannah

14. **Flowering Plants**—The application of the principles of classification to the orders of Dicotyledons, with particular attention to legumes, roses and other economic groups. This and the preceding course are intended to furnish a broad working knowledge of the flowering plants. They are recommended to agricultural and pharmacy students especially, since they are designed to give the taxonomic background for agronomy, horticulture and pharmacy. Two hours lecture and quiz. Four to ten hours work in the laboratory, herbarium and field. Two to four hours credit. Second semester.
Pool, Hannah

15. **Elementary Mycology**—The general morphology, physiology and classification of the fungi. Emphasis will be placed upon identification. Two hours lecture. Four to six hours laboratory and field work. Two to three hours credit. First and second semesters.
L. B. Walker

16. See Plant Pathology and Physiology 108.

17. **Advanced Mycology**—Study of a selected group of fungi including morphology, development and classification. Two lectures or conferences. Four to thirteen hours laboratory. Two to five hours credit. First semester. L. B. Walker

18. **Advanced Mycology**—Course 17 continued. Second semester.

III. Physiological Botany

19. See Plant Pathology and Physiology 105.

20. **Elementary Ecology**—The study and measurement in the field and laboratory of the factors which make the plant's home together with a study of plant structures and activities in response to the environment. Application of ecological methods to grazing, forestry plant diseases and general crop production. The composition and development of vegetation. Three hours attendance. Six hours field and laboratory work. Three hours credit. First and second semesters. Weaver

21. **Plant Ecology**—An extended study and measurement of the factors to which plants are subjected in their natural habitats. The course also includes a field and laboratory study of the anatomy of leaves, stems and roots and the reproduction and dissemination of plants as related to external conditions. Prerequisite: Course 20. Two hours attendance. Four to six hours field and laboratory work. Two to three hours credit. First semester. Weaver

22. **Plant Ecology**—A continuation of course 21 but including methods for the study of the origin, development, structure and succession of vegetation types or plant associations. Detailed investigations will be made in the prairies, salt-basins and woodlands about Lincoln. An introduction to methods of ecological investigations. Prerequisite: Course 20. Two hours attendance. Four to six hours field and laboratory work. Two to three hours credit. Second semester. Weaver

27. **The Plant Geography of North America**—Lectures, herbarium work and assigned readings upon the natural plant life regions of North America. A general introduction to phytogeographic methods with particular reference to our own continent. Prerequisite: Courses 13, 14, 19, 20. Two hours attendance. Four hours preparation. Two hours credit. First semester. Pool

28. **The Natural Plant Life of Nebraska**—A special study of the natural vegetation of Nebraska by means of lectures, herbarium work and readings. The sources of the flora of Nebraska and the development and structure of the vegetation of the Prairies and Great Plains will also be studied. Two hours attendance. Four hours preparation. Two hours credit. Second semester. Pool

IV. Technical Botany

29. **History of Botany**—A brief survey of the development and differentiation of Botany from about 400 B. C. to the present day. For advanced and graduate students. Two hours attendance. Four hours reading and other preparation. Two hours credit. First semester. Pool, Weaver

31. **Botanical Literature**—A study of the sources of botanical information, books, periodicals and other valuable sources. Library work with frequent conferences and quizzes. For advanced and graduate students. Four hours library work. Two hours credit. First semester. Pool

33. **Botany for Teachers**—A course intended to acquaint students with the materials and methods of teaching Botany in the high schools and colleges. Suggestions as to the composition and arrangement of courses; what to do in the laboratory and field; how to collect material and how to prepare material for future use; the herbarium and other illustrative material; books, guides and other useful literature; sources of materials and supplies for the laboratory. Prerequisite: Courses 1, 2 or 3, 4. Two hours attendance. Four hours preparation. Two hours credit. First semester. Weaver

34. **Botany for Teachers**—Course 33 continued. Second semester.

The student may register for any one of these courses year after year until the completion of his problem.

37. **Mycological Research**—Assigned problems in field and laboratory. Five to ten hours credit. First semester. Pool, L. B. Walker

38. **Mycological Research**—Course 37 continued. Second semester.

41. **Taxonomic Research**—Assigned problems in the field and herbarium. Five to ten hours credit. First semester. Pool

42. **Taxonomic Research**—Course 41 continued. Second semester.

43. **Morphological Research**—Assigned problems in the morphology of a plant, or group of plants. Five to ten hours credit. First semester. Pool, E. R. Walker

44. **Morphological Research**—Course 43 continued. Second semester.

45. **Ecological Research**—Assigned problems in field and laboratory. Five to ten hours credit. First semester. Pool, Weaver

46. **Ecological Research**—Course 45 continued. Second semester.

CHEMISTRY

Professor Upson *(Head of Department)*, Professor Plum, Associate Professor Borrowman, Associate Professor Eastlack, Assistant Professor Fossler, Assistant Professor Calvin, Assistant Professor Frankforter, Mr. Anderson, Mr. Vose, Mr. Stockman, Miss Davis, Mr. Abbott, Mr. Ingersoll, Mr. Arenson, Mr. Boyd, Miss Sands.

Requirements for the Master's Degree

For the Master's Degree a dissertation and not less than twenty-five hours of graduate work in advance of courses 22 and 34 are required. These may be selected from courses 5, 8, 14, 23, 24, 27 or 28, 33, 34,

35, 36, 39, 40, 43, 44, 46, 51, 52, 58, 59, 67, 68 and 69, with the approval of the Head of the Department. They must include courses 39 and 51. The thesis must embody the results of research under the direction of a member of the department.

Requirements for the Degree of Doctor of Philosophy

1. The candidate for the Degree of Doctor of Philosophy must present a thesis embodying the result of original research in General, Inorganic, Organic, Physical or Industrial Chemistry. This must represent a real contribution to knowledge. The work is usually carried out under the direction of a member of the Department. The research work will occupy practically the whole of the student's time for from three to five semesters, depending on his preparation.

2. The general requirements for all candidates, in advance of General Chemistry, are; courses 5, 14, 19, 22, 33, 34, 39, 51 and 52.

3. In addition to the above, the candidate must fulfill one of the following specific sets of requirements, arranged according to the thesis subject:

General Chemistry, Inorganic Chemistry and Physical Chemistry—Courses 8, 10, 58 and 59, and six hours from courses 20, 23-E, 23-W, and 24.

Organic Chemistry—Courses 33, 34, 35, 36, 39, 40, 43, 23-Or. and 57 and six hours from courses 20, 23-E, 23-W, 24, 43, 44 and 46.

Industrial Chemistry—Courses 8, 23-E, 23-IS, 23-M, 23-W, 27 and 28, and six hours from courses 20, 23-F, 23-G and 24.

In addition to one set of specific requirements at least three courses will be chosen from the special lecture courses 8-10, 35-38, 43, 58, 59, 68 and 69.

4. In addition to the above requirements the candidate must select from six to ten hours of work of an advanced character in some other department. This constitutes the requirements for the minor. The courses should be chosen on consultation with the Head of the Department. Students majoring in General or Physical Chemistry are advised to take their minor in Physics. Those majoring in Organic Chemistry may select one of the Biological Sciences as Botany or Bacteriology. Those majoring in Industrial and Inorganic Chemistry may conveniently select Geology as their minor.

Chemistry the Secondary Subject

Students electing a minor in chemistry for the Ph. D. degree must select not less than fifteen hours in advance of courses 22 and 31.

5. At least one year prior to taking his degree the candidate must pass a preliminary examination in his major subject in order to determine whether he will be accepted as a candidate for a degree in the

following year. He must also pass a final examination on both his major and minor subjects. The candidate must also fulfill the general requirements of the University as to residence, etc.

COURSES

5. **Inorganic Preparations**—Preparation of typical inorganic compounds. Prerequisite: Course 22. Two hours lecture. Seven to thirteen hours laboratory. Three to five hours credit. First semester. Plum

8. **Advanced General Chemistry**—The periodic system; the interrelations of the elements; the rarer elements. Prerequisite: Courses 22 and 52. Two hours lecture. Second semester.

10. **Special Topics in Inorganic Chemistry**—Discussion of selected topics in organic chemistry such as, complex salts, hydrates, peroxides, Werener's theory, etc. The topics may be changed from year to year. Prerequisite: Courses 22 and 52. Two hours lectures. Second semester. Plum

14. **History of Chemistry**—Lectures on the history of chemistry discussed from the standpoint of the life and work of the great discoverers in this field of science. Prerequisite: Course 2 or 4 and 34. Two hours lecture. Two hours credit. Second semester. Upson (Given in alternate years.)

20. **Advanced Qualitative Analysis**—Special methods in qualitative analysis including the use of the spectroscope. Nine hours laboratory. Three hours credit. Second semester. Eastlack

23. **Special Methods in Quantitative Analysis.** Prerequisite: Course 22.

23-E Electrolytic Analysis.
23-F Food Analysis.
23-G Gas Analysis.
23-IS Iron and Steel Analysis.
23-M Special Mineral Analysis.
23-Or Organic Elementary Analysis.
23-W Water Analysis. Each six hours laboratory. Two hours credit. Either semester.

24. **Advanced Analytical Chemistry**—Leading to Analytical Research. Nine to fifteen hours laboratory. Three to five hours credit. First and second semesters. Eastlack

27. **Fire Assaying**—Principles and practice of the estimation of gold, silver and lead in ores and metallurgical products, by fire methods. Prerequisite: Courses 2 or 4 and 19. Two hours credit. Two hours lectures and recitations. Four hours laboratory. Three hours credit. First semester. Borrowman

28. **Wet Assaying**—A study of methods in the analyses of ores and metallurgical products by volumetric procedures chiefly. Two hours lectures and recitations. Four hours laboratory. Three hours credit. Second semester. Borrowman

33. **General Organic Chemistry**—Prerequisite: Chemistry 2 or 4. Three hours lecture. Six hours laboratory. Six hours preparation. Five hours credit. First semester. Upson

34. **General Organic Chemistry**—Course 33 continued. Second semester.

Note: Courses 33 and 34 form a continuous course covering the compounds of carbon, including the fatty and aromatic series. The chemical behavior, the characteristic reactions and the relationships of the different classes of carbon compounds are discussed in great detail. Modern theories are freely used. Richter's or Perkin's and Kipping's organic chemistry are used as reference books. Required of students specializing in Chemistry. Graduate students who have had laboratory work in Organic Chemistry may register for the lectures only.

35. **Advanced Organic Chemistry**—Lectures and readings based on Cohen's Organic Chemistry, volumes I and II. Three hours lecture. Three hours credit. First semester. Upson

36. **Advanced Organic Chemistry**—Course 35 continued. Three hours lecture. Three hours credit. Second semester. Upson

38. **The Carbohydrates and the Terpenes and Their Derivatives**—Prerequisite: Course 34. Two hours lecture. Two hours credit. Second semester. Upson

39. **Advanced Organic Preparations**—Prerequisite: Course 34. Laboratory work in Organic Chemistry preparatory to research. The preparation of a number of typical organic compounds. Nine to fifteen hours laboratory. Three to five hours credit. First semester. Upson

40. **Advanced Organic Preparations**—Course 39 continued. The repetition of some classical piece of organic research. Nine to fifteen hours laboratory. Three to five hours credit. Second semester. Upson

43. **The Chemistry of Nitrogen Compounds**—Prerequisite: Course 34. Lectures on the compounds of nitrogen both inorganic and organic. Two hours lecture. Two hours credit. Laboratory work for additional credit may be elected. One hour credit for each three hours laboratory. First semester. Fossler

44. **The Chemistry of Dye Stuffs, Essential Oils and Synthetic Drugs**—Prerequisite: Course 34. Three hours lecture. Three hours

credit. Laboratory work following Fischer's "Preparations" may be elected. One hour credit for each three hours laboratory. Second semester. Fossler

46. **Biochemistry**—Prerequisite: Course 31. The chemistry of carbohydrates, fats, proteins, colloids, and inorganic food materials. The chemistry of enzyme action, the chemistry of digestion, metabolism and excretion and the chemistry of nutrition are considered. This course presents the principles of physiological chemistry as a foundation for work in the biological sciences. Three hours lecture. Six hours laboratory. Five hours credit. Second semester.
Fossler

51. **Elementary Physical Chemistry**—Lectures on the laws of gases, the atomic and kinetic theories, optical activity, phase rule, etc. Laboratory work on the determination of vapor densities, molecular weights, degree of ionization, rate of reaction, optical activity, etc. Prerequisite: Chemistry 22. Two hours lecture. Six hours laboratory. Four hours preparation. Four hours credit. First semester.

52. **Physical Chemistry**—Course 51 continued. Lectures and recitations on the theories of solutions, electro chemistry, reaction velocity, chemical equilibrium and related subjects. Laboratory work; continuation of course 51. Two hours lecture. Six hours laboratory. Four hours preparation. Four hours credit. Second semester.

58. **Colloid Chemistry**—Prerequisite: Courses 22 and 31. The classification of disperse systems. The electrical, chemical, optical, and physical properties of substances in the colloid state. Two hours lecture and demonstration. Two hours credit. Second semester.
Upson

59. **Radio Activity and the Nature of Matter**—Two hours lecture. Two hours credit. First semester. Plum

67. **Water Chemistry**—A study of water for industrial use; methods of analysis and purification. Prerequisite: Courses 2 or 4, 19 and 22. Two hours lecture and quiz. Four hours laboratory. Two hours credit. First semester. Borrowman

68. **Advanced Water Chemistry**—Advanced work along lines indicated in course 67, involving comparison of methods, etc. Collateral readings and consultations with instructor in charge. Laboratory work arranged with instructor. Credit according to work done. Second semester. Borrowman

69. **Ceramics**—A study of the physical and chemical properties of clays. Prerequisite: Courses 2 or 4, 19 and 22. Two hours lectures and quiz. Four hours laboratory. Two hours credit. Borrowman

80-88. **Research Work**—These courses will include from thirty to forty hours per week of laboratory work in one of the divisions of chemistry under the direction of a member of the Department. The research work for a doctor's thesis will require from three to five semesters. The candidate must satisfy the members of the Department that he has had adequate training before he will be admitted to research.

80. **Research in Organic, Physico-Organic or Colloid Chemistry** Upson
82. **Research in General or Physical Chemistry.** Plum
84. **Research in Industrial or Analytical Chemistry.** Borrowman
86. **Research in Analytical or Physical Chemistry.** Eastlack
88. **Research in Organic Chemistry.** Fossler

CIVIL ENGINEERING

Professor Stout[1] *(Head of Department)*, Associate Professor Bridgman *(Acting Head of Department)*, Professor Chatburn, Associate Professor Grant, Assistant Professor Riddervold, Mr. Sjogren

COURSES

2. **Surveying**—Abbreviated course for students in Mechanical Engineering. Prerequisite: Trigonometry. Two hours attendance with occasional substitution of three-hour field periods. Four hours preparation. Two hours credit. Second semester. Bridgman

5. **Surveying**—To be accompanied by course 5a. Prerequisite: Trigonometry. Two hours attendance. Four hours preparation. Two hours credit. First and second semesters. Bridgman

5a. **Surveying Field Work**—To accompany course 5. Six hours field. Two hours credit. First and second semester. Bridgman

6. **Surveying**—Course 5 continued. Second semester.

6a. **Surveying Field Work**—Course 5a continued. Second semester.

7. **Railway and Highway Surveying**—Field and office methods employed in surveys for locating and constructing railroads. Prerequisite: Courses 5 and 5a. One hour attendance. Six hours field. Two hours preparation. Three hours credit. First semester. Bridgman

8. **Railway and Highway Construction**—Principles and practice. Roadbed, tunnels, minor structures. Contractors' organization and equipment. Cost data and analysis; estimates. Prerequisite: Course 8 or equivalent experience in actual work. Two hours attendance. Four hours preparation. Two hours credit. Second semester. Bridgman

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[1]Absent on leave.

10. **Economic Theory of Railway Location**—Scientific balancing of cost, receipts and operating expenses. Open to fourth-year students. Three hours attendance. Six hours preparation. Three hours credit. Second semester. Bridgman

11. **Hydraulics**—Prerequisite: Calculus and Applied Mechanics 14. Two hours attendance. Four hours preparation. Two hours credit. Both semesters. Stout, Riddervold

12. **Irrigation Engineering**—Grade, cross-section and capacity of canals; surveys; designs of structures; source of water supply; analysis of hydrographic data; return and seepage waters; irrigation by pumping; organization; legal and economic principles. Prerequisite: Course 11. Three hours attendance. Six hours preparation. Three hours credit. Second semester. Stout, Sjogren

13. **Water Supply of Cities**—Prerequisite: Course 11. Three hours attendance. Six hours preparation. Three hours credit. First semester. Grant

14. **Cleaning and Sewerage of Cities**—Prerequisite: Course 11. Three hours attendance. Six hours preparation. Three hours credit. Second semester. Grant

15. **Design of Framed Structures**—Prerequisite: Course 16. Three hours attendance. Six hours preparation. Three hours credit. First semester. Riddervold

16. **Stress in Framed Structures**—Prerequisite: Applied Mechanics 15 or 16. Four hours attendance. Eight hours preparation. Four hours credit. Second semester. Riddervold

17. **Design in Reinforced Concrete**—Prerequisite: Applied Mechanics 15. Two hours attendance. Four hours preparation or drawing. Two hours credit. First semester. Riddervold

18. **Structural Design**—Adapted to the needs of students in Agricultural, Mechanical and Electrical Engineering. Prerequisite: Applied Mechanics 16. Two hours attendance. Four hours preparation. Two hours credit. Second semester. Riddervold

20. **Advanced Theory of Structures**—Arches, cantilevers, continuous girders, statically indeterminate stresses. Prerequisite: Course 15. Three hours attendance. Six hours preparation. Three hours credit. Second semester. Riddervold

21. **Roads, Streets and Pavements**—Lectures, assigned readings and reports. Two hours attendance. Four hours preparation. Two hours credit. First semester. Chatburn

22. **Masonry Construction**—Prerequisite: Applied Mechanics 14. Four hours attendance. Eight hours preparation. Four hours credit. Second semester. Riddervold

24. **Hydraulic Engineering**—Hydraulic development for purposes of drainage, power and transportation. Flood protection. Collection and analysis of hydrographic data and the principles involved in the design of reservoirs, canals, levees and structures. Prerequisite: Course 11. Three hours attendance. Six hours preparation. Three hours credit. Second semester. Stout, Sjogren

25. **Engineering Economics**—Conducted on the seminar plan. Two hours attendance. Four hours preparation. Two hours credit. First semester. Stout, Bridgman, Grant

26. **Engineering Economics**—Course 25 continued. Second semester.

400. **Thesis**—Open to approved seniors. Three to five hours credit.

DAIRY HUSBANDRY

Professor Frandsen *(Head of Department)*, Assistant Professor Nevens, Assistant Professor Thorson, Mr. Thompson

COURSES

51. **Dairy Seminar**—Elective for students specializing in dairying. This course consists of a study of the work accomplished by the various experiment stations, also a review of the best foreign dairy literature. One hour attendance. Two hours preparations. One hour credit. First semester. Frandsen

52. **Dairy Seminar**—Course 51 continued. Second semester.

53. **Thesis**—Original work and investigation on some phase of the dairy industry. Frequent conferences with instructors. Prerequisite: Senior standing. Two to four hours preparation. One or two hours credit. First or second semester. Frandsen, Nevens

101. **Research Methods**—A critical study of the methods employed in conducting dairy experimental work at this and other stations. One hour attendance. One hour credit. First semester.
Frandsen, Nevens

102. **Research Methods**—Course 101 conitnued. Second semester.

103. **Research in Milk Production**—A large herd of cattle of the leading dairy breeds is available for use in studying problems of feeding, breeding, milk production, growth and care and management of the dairy animal. This herd produces sanitary milk for the city trade and special opportunities are offered for a critical study of sanitary and certified milk production. Students especially interested are allowed to assist with the investigations now under way at the Experiment Station and in certain instances may undertake special problems independently. Thesis required. First semester.
Frandsen, Nevens

104. **Research in Milk Production**—Course 103 continued. Second semester.

105. **Research in Dairy Manufactures**—Opportunity and facilities are given by special arrangement to study and investigate special problems in butter making, ice cream making, cheese making and other work directly pertaining to dairy manufactures. First semester.

Frandsen, Thorson

106. **Research in Dairy Manufactures**—Course 105 continued. Second semester.

ECONOMICS AND COMMERCE

Professor LeRossignol *(Head of Department)*, Professor Virtue, Associate Professor Stephens, Associate Professor Martin, Associate Professor Freeman, Assistant Professor England, Mr. Bullock, Mr. Cole

Candidates for the degree of Master of Arts are required to complete at least one year's work and to present a satisfactory thesis, showing ability to carry on independent investigation and to assemble the results. A candidate may give all of his time to economic studies, or he may offer a major (24 hours) in one department and a minor (10 hours) in another.

Candidates for the degree of Doctor of Philosophy are required to complete at least the equivalent of three years' work after taking the Bachelor's degree, or two years' work after the Master's degree, but the degree will not be granted unless the candidate attains a satisfactory standard of scholarship, irrespective of time of residence or study. In addition to his major course, which should represent about three-fifths of the total work, the candidate may offer either one minor or two. Candidates taking a major in Economics are usually advised to take minors in History, Political Science, Philosophy or other subjects more or less closely related to the major. In every case a thesis is required, embodying the results of original investigation.

The University offers excellent opportunities for graduate study and research. Several important libraries are accessible to students, and there is no lack of promising fields of investigation, particularly along lines of public and private finance, economic history of Nebraska and the West in general, agricultural conditions, commercial relations and problems of capital and labor. The Department offers a number of special courses, and these may be supplemented by allied courses in other departments.

COURSES

15. **Advanced Economics**—A review of the fundamental principles of economics devoted chiefly to theories of value and distribution.

History of economic thought; medieval economics; Mercantilists, Cameralists and Physiocrats; the English classical economists; the Historical School; the Austrian School; relation of economic theory to industrial conditions; importance of economic theory in relation to social reform. Students registering in this course are expected to continue in course 16. Two hours attendance. Two hours credit. First semester. LeRossignol

16. **Advanced Economics**—Course 15 continued. Two hours attendance. Two hours credit. Second semester.

19. **Economic Crises**—A comparative study of economic, industrial and financial crises from the seventeenth century to the present day. Especial attention is given to the recent world crises. The work covers the local and minor crisis preliminary to the main crisis and the transmission of the crisis from country to country; the fluctuation in investment, bank items and prices in the principal countries; the action and reaction between industrial activity and financial business. Supplementary readings on the theory of crises. Two hours attendance. Two hours credit. First semester. England

25. **Corporation Finance and Investments**—This course includes a study of corporate organization, capitalization, income, expansion, readjustment and contraction. Special emphasis is given to the discussion of the merits and elements of the stocks and bonds of industrial, public service and railway corporations as investments, and the stock market methods underlying their purchase and sale. Two hours attendance. Two hours credit. First semester.

Stephens, Freeman

26. **Trust Problems**—The rise and development of trust forms of business organization; the conditions essential to the operation and growth of trusts; the elements of large-scale production and monopoly entering into the formation of trusts; dangers arising from their unrestricted operation; remedies, including governmental interference; Federal and state anti-trust laws and decisions. Two hours attendance. Two hours credit. Second semester. Stephens, Freeman

35. **Labor Problems**—History of the labor movement in Europe and America; wages in the 19th century; theory of wages; methods of remuneration; the minimum wage; hours and conditions of labor; migration; organization and conflicts of capital and labor; conciliation and arbitration; employers' liability; insurance and pensions; workingmen in politics; relations of socialism to the labor movement. Three hours attendance. Three hours credit. First semester.

LeRossignol

36. **Methods of Industrial Peace**—A special study of the labor problem as a conflict between employers and laborers, harmony and divergence of interests; organization of employers and laborers; their aims and methods; interests of the general public; gains and losses thru strikes; trade agreements; conciliation; voluntary and compulsory arbitration; co-operation; profit sharing; political activities of workingmen and benefits obtained thru legislation; experience of New Zealand, Australia and Canada; progress of the working class in the United States and other countries. Three hours attendance. Three hours credit. Second semester. LeRossignol

[37. **Socialism**—History of socialistic thought before the French Revolution; Utopias of Plato, More, Campanella; relation of the French Revolution to modern Socialism; Utopian theories of Owen, Saint-Simon, Fourier; communistic experiments in Europe and America; Proudhon, Blanc and other French socialists; Marx, Engels, Lassalle and other German socialists; growth of socialism thruout the world; socialism in the United States; Syndicalism; recent socialistic theory and criticism. Three hours attendance. Three hours credit. First semester. Not given in 1918-1919. LeRossignol]

45. **Economic Seminar**—Open to a limited number of graduates and other advanced students. Each student will make an intensive study of a given subject, under the direction of a member of the Faculty, and will report the results of his investigation before the class. Members of the Faculty also will give lectures and take part in the discussions. One to two hours attendance. One to three hours credit. First semester. LeRossignol, Virtue, Stephens, Martin, England

46. **Economic Seminar**—Course 45 continued. Students registering for course 45 will be expected to continue in course 46, and will receive credit according to the work which they do. One to three hours credit. Second semester.

EDUCATIONAL COURSES

The chief aim of the departments of education in their graduate work, (see under Graduate School of Education), is to furnish opportunity to school officers, special teachers, principals, superintendents, teachers of education, college and normal school instructors and public spirited citizens, for advanced study and investigation of important problems in education. A secondary aim is to advance the profession of teaching, by aiding students in discovering themselves, and by encouraging them in productive activity.

For the graduate teachers' diploma, (see Graduate School of Education), there is a minimum requirement of twelve semestral hours in

education. The only fixed requirements are four semestral hours in adolescence, two in graduate theory and practice and four in graduate experimental psychology. The additional requirements may be elected from courses 5-6, 8-14, 24-26 and 36, or the student may elect two hours from graduate courses on methods of teaching his major subject under the advice of the professor of theory and practice. For the above diploma courses 1, 2, 7 and 20 or 21 in Education and 1 and 2 in Philosophy are prerequisite.

Candidates for advanced degrees in education must have completed the professional requirements leading to the University Teachers' Certificate or undergraduate college credit in education equivalent to at least twelve semestral hours. Proficiency in one or more academic subjects taught in the high school is also required.

Master of Arts Requirement—Second Minor: Four hours class-room work for one year. First Minor: Six hours class-room work for one year, with assigned readings equivalent to a two-hour course. Major: At least eight hours class-room work for one year, assigned readings and a thesis representing the equivalent of a six-hour course for one year.

The major for the master's degree may be accepted as a minor for the doctorate. The departments are not at present sufficiently equipped to encourage candidates for the doctor's degree in Education; however, facilities for a limited number of strong candidates can be provided. A major for the doctor's degree in Education requires three years of graduate work of not less than twelve semestral hours per year and a thesis equivalent to half as many more hours. The number of hours required for major and minor, as given above, is only approximate, and cannot be relied upon unless the quality of the work is of high order.

The combined departments have scholarships and fellowships open to graduate students of special merit. The scholarships are open only to students of full graduate rank while the fellowships are open to Masters or students of one year graduate standing in Education.

COURSES

I. EDUCATION

Professor Luckey *(Head of Department)*, Mr. Bentley

5. **Systems of Education**—Their origin and development, including a comparative study of the leading systems of education in Europe and America. The educational systems of Germany, France, England and the United States are separately studied and compared. Open to seniors and graduates. Two hours attendance. Two hours credit. First semester. Luckey

6. **School Hygiene**—A seminary course devoted to the study of school environments and curricula in reference to their effect upon the health, growth and development of school children, including the location and sanitation of school buildings—light, heat, ventilation, furniture, medical inspection, school diseases, baths, lunches; sleep, food, clothing, exercise, study, fatigue, recreation, health of teacher and pupils. Open to seniors and graduates. Two hours attendance. Two hours credit. Second semester. Luckey

9. **Adolescence**—The health, growth, mental and moral development of youth as related to the various problems of secondary education such as attendance, interest, habits of study, discipline, school spirit, ideals, play, work, character. An advanced course in child study especially adapted to secondary teachers, principals and superintendents. Prerequisite: Courses 1, 2 and 7. Intended primarily for graduates. Two hours attendance. Two hours credit. First semester. Luckey

10. **Adolescence**—Course 9 continued. Second semester.

11. **Philosophy of Education**—A study of the principles underlying all education, and their influence in determining the material, the curriculum, and the method of instruction. Open to graduate students or seniors specializing in education. Two hours attendance. Two hours credit. First semester. Luckey

12. **Philosophy of Education**—Course 11 continued. Second semester.

13. **Graduate Seminary**—A study of current educational literature as found in the best periodicals, and a study of one or more educational problems of special interest to the teachers of Nebraska. Students will be directed in the preparation of theses and productive studies leading to higher degrees in education. Open to graduates who are working for higher degrees in education. One or two hours credit. First semester. Luckey, Reed

14. **Graduate Seminary**—Course 13 continued. Second semester.

16a in Education or 16 in Philosophy. **Educational Psychology**—A practical study of the factors which influence the development of body and mind. May be applied on required hours in education. Two hours attendance. Two hours credit. Second semester. Wolfe

II. EDUCATIONAL THEORY AND PRACTICE

Professor Fordyce *(Head of Department)*, Miss Allen, Mr. Reimund

25. **Educational Measurements**—A consideration of the standards and scales for the measurement of educational processes together with the technique of applying these standards to educational products in

determining efficiency in school achievements and in conducting school surveys. Two hours attendance. Two hours credit. First semester.
Fordyce

26. **Supervision of Instruction**—This course offers to graduate students and to experienced teachers an opportunity to study the underlying principles of criticism and the general functions of supervising officers, including the application of established standards in measuring teaching efficiency and in the improvement of the teachers in service. Practical work in supervision is provided in the Teachers College High School. Two hours attendance. Two hours credit. Second semester.
Fordyce

26a. **School Surveys**—A study of the results of the principal city, county and state surveys recently made and the technique of conducting such surveys as a basis of field investigation. Each student will be assigned a school system for a critical study for a period extending thru the scholastic year, embracing the following: Course of study, achievements of pupils, quality of instruction, supervision, classification and progress, social and recreative activities, selection, training and tenure of teachers, buildings and equipments, records, reports and expenditures. The results of these studies shall be embodied in a detailed report. Prerequisite: Course 25. Two to three hours credit. First semester. Fordyce

26b. **School Surveys**—Course 26a continued. Second semester.

III. SECONDARY EDUCATION

Professor Reed *(Head of Department)*

35. **The Secondary School**—A general course on the problems of the secondary school. Lectures, discussions, readings and reports. Open to juniors, seniors and graduates. One to two hours attendance. One or two hours credit. First and second semesters. Reed

36. **The Secondary School**—An advanced course on the organization and problems of the secondary school. Open to graduates. Two hours attendance. Two hours credit. First semester. Reed

IV. SCHOOL ADMINISTRATION

Professor Taylor *(Head of Department)*, Associate Professor Hill

37. **Educational Organization and Administration**—This course is planned especially for superintendents and principals. It deals with the problems of organization and administration of public schools as viewed in the light of the prevailing systems in America. Among the topics considered are national and state control of education; the

county, township, city and rural system; school building; playground; the school as a social center; inter-relation of school boards; superintendents, principals and teachers; supervision of instruction—the teaching staff, improvement of teacher in service; administration of secondary and elementary schools; education for defective and subnormal children; discipline, government, courses of study, grading of promotion. Open to teachers in training. Number of hours credit depends upon work done. First semester. Taylor

38. **Educational Organization and Administration**—Course 37 continued. Second semester.

ELECTRICAL ENGINEERING

Professor Ferguson *(Head of Department)*, Associate Professor Hollister, Mr. Edison

COURSES

15. **Technical Reports**—Preparation and presentation of reports upon technical subjects. Prerequisite: Courses 1, 2 and 8 and registration in 5. One hour attendance. Two hours preparation. One hour credit. First semester. Hollister

16. **Technical Reports**—Course 15 continued. Elective. One hour attendance. Two hours preparation. One hour credit. Second semester. Hollister

17. **Electric Lighting and Illumination**—Wiring codes, lighting apparatus and circuits, illumination and illuminating engineering. Prerequisite: For Electrical Engineers—course 1 and Physics 4; for Architectural Engineers—Physics 4 and E. E. 3. Two hours attendance. Four hours preparation. Two hours credit. First semester. Edison

18. **Electro-Chemical Engineering**—Elements of electro-chemistry, with special emphasis placed upon some of the commercially most important processes as metal winning, furnaces, storage batteries, etc. Prerequisite: Courses 1 and 8. Two hours attendance. Four hours preparation. Two hours credit. Second semester. Ferguson

19. **Telephone Engineering**—Line construction, instruments, switchboards, systems, operations, etc. Prerequisite: Courses 1 and 8 and registration in 5. Two hours attendance. Four hours preparation. Two hours credit. First semester. Hollister

20. **Electric Railways**—Preliminary estimates and economics, construction, equipment and operation. Prerequisite: Courses 1 and 8. Three hours attendance. Six hours preparation. Three hours credit. Second semester. Ferguson

21. **Electric Power Systems**—Generation, transmission, distribution and utilization of power. Prerequisite: Courses 2 and 8 and registration in course 5. Three hours attendance. Six hours preparation. Three hours credit. First semester. Edison

22. **Electrical Design**—Alternate- current apparatus, transformers, synchronous generators. Prerequisite: Courses 5 and 9. Three hours lecture. Six hours calculation and drafting. Three hours credit. Second semester. Ferguson

31. **Engineering Problems**—Engineering problems demanding a knowledge of algebra, trigonometry, calculus, vectors, mechanics, electrical phenomena, alternating-current circuits, etc. Prerequisite: Math. 4, Phys. 5 and registration in E. E. 5 and 9. Two hours attendance. Four hours preparation. Two hours credit. First semester. Ferguson

202. **Elements of Electrical Engineering**—Lecture course designed as a general introduction to the subject. It is intended to give both breadth and perspective. Required of Electrical Engineering sophomores. One hour attendance. Two hours preparation. One hour credit. Second semester. Ferguson

400. **Thesis**—Open to approved seniors. Three to five hours credit.

51. **Alternating-Currents**—Transients, electrical waves, etc. First or second semester. Three hours credit. Ferguson

61. **Electrical Design**—Advanced electrical apparatus design. Three hours credit. First or second semester. Ferguson

91. **Electrical Laboratory**—Advanced investigations. Hours and credit to be arranged. First semester. Ferguson, Hollister

92. **Electrical Laboratory**—Course 91 continued. Hours and credit to be arranged. Second semester. Ferguson, Hollister

ENGLISH HISTORY

Professor Jones *(Head of Department)*

English history occupies a position intermediate between general European history and American history, leading from the one and into the other. It affords perhaps the best introduction to the general history of the modern world, which is touched at more points by the growth of the British Empire and the extension of the English language and institution, than by any other historical subject. Students of English literature, of law, economics and sociology will find this field of special importance.

The Degree of Master of Arts—The requirements for the degree of master of arts with English history as a major are: (1) An accurate and comprehensive knowledge of the outlines of English history, and a more detailed knowledge of some period; an acquaintance with the literature of the special period; a general acquaintance with modern European history; and (2) a thesis based upon an exhaustive study of the source and secondary material in some narrow field of English history.

The thesis will be written in seminar 11 and 12, but the candidate is expected to show greater independence and initiative than the other members of the seminar, and to devote to the subject a large amount of time which cannot be determined in advance. For this reason, it is not always possible for even a well prepared student to meet all the requirements in one year; but it should be possible to satisfy the requirement of residence.

For those desiring a minor in English history, courses will be arranged in consultation with the candidate's major adviser.

COURSES

11. **Seminar**—Selected topics. Open to graduate and advanced students upon consent of the instructor. Two hours attendance. Two hours credit. First semester. Jones

12. **Seminar**—Selected topics. Open to graduate and advanced students upon consent of the instructor. Two hours attendance. Two hours credit. Second semester. Jones

ENGLISH LANGUAGE AND LITERATURE

Professor Sherman *(Head of Department)*, Professor Stuff, Professor Wallace, Professor Pound, Associate Professor Scott

Students intending candidacy for the degree of Master of Arts must have completed the two years of preparation represented by courses 1, 2, 5, 6, 11, 12. Work will be arranged for each from courses beginning with course 15 below, but major programs must include courses 17, 18 and in general 35, 36.

Candidates for the master's degree, with the Graduate Teachers' Diploma, will complete in addition to the foregoing, for a combined major, courses 31, 32, courses 3, 4, 7, 8 in Rhetoric, and four hours of especially assigned work in Rhetoric or English Literature, with thesis.

COURSES

15. **The Short Story**—Art of the modern short story in America, England, Russia, Germany, France and Italy, with a survey of its

evolution and extensive critical readings, in the study of principles. Entrance by permission of instructor. Two hours attendance. Two hours credit. First semester. Wallace

15a. **Library Course in 16th Century Dramatic and Other Literature**—Lectures, reports and criticisms. Two hours attendance. Three hours credit. First semester. Wallace

16. **The Short Story and Poem**—Course 15 continued. Also study of modern foreign and domestic poets in story-telling, in various verse forms, with constructive exemplifications in both prose and verse. Two hours attendance. Two hours credit. Second semester. Wallace

16a. **Library Course in 18th Century Authors**—Lectures, reports and criticisms. Two hours attendance. Three hours credit. Second semester. Wallace

17. **Essentials of Old English; Outline of Old English Grammar**—Reading at earliest moment of prose and poetic specimens. Beowulf, thru 500 lines. Introductory to the history of the English language and the history of Old English literature. Four hours attendance. Four hours credit. First semester. Pound

18. **Old and Middle English and History of the English Language**—Course 17 continued. Beowulf continued. The development of the language traced from Old to Modern English, the history of inflections, sound changes, spelling, etc. Outline of Middle English grammar. Reading of selected Middle English texts before Chaucer. Four hours credit. Second semester. Pound

19. **The Novel**—Its relation to the expression of life. Study of modes and art principles in the interpretation of life. Prerequisite: Courses 1 and 2. Two hours attendance. Two hours credit. First semester. Stuff

20. **The Novel**—Course 19 continued. Two hours attendance. Two hours credit. Second semester.

21. **Shakespeare**—A popular course in the reading and interpretation of all the plays of Shakespeare. Principles, devices and conventions of the drama and new interpretations examined in the light of recent research. New evidences of staging at the Globe and Blackfriars. Setting and rendition of scenes by members of the class in exemplification on the reconstructed Shakespearean stage. Based on personal Shakespearean researches in London. Entrance by permission of instructor. Three hours attendance. Three to four hours credit. First semester. Wallace

22. **Shakespeare**—Course 21 continued. Second semester.

21a. **Elizabethan-Jacobean Drama and Theater**—Shakespeare's contemporaries, to the readjustment of the treaters, 1610. Reciprocal influences. Principles of the drama examined through extensive reading of the plays. History of the play-houses, with new evidences of staging and the effects on play construction and present interpretations. Based on personal special researches in England. Entrance by permission of instructor. Two hours attendance. Weekly conferences. Three hours credit. First semester. Wallace

22a. **Elizabethan-Jacobean Drama and Theater**—Course 21a continued. Shakespeare's contemporaries and successors from 1610 to the termination of the Shakespearean theaters, 1642. Introduction to scientific methods of investigation. Two hours attendance. Weekly conferences. Three hours credit. Second semester. Wallace

23. **Browning**—Written studies of Luria, Return of the Druses, Pippa Passes. Two hours attendance. Two hours credit. First semester. Sherman

24. **Browning**—Course 23 continued. The Ring and the Book, Fifine at the Fair. Second semester.

25. **Shakespeare**—Advanced studies in dramatic art, as represented in Cymbeline, The Winter's Tale, Coriolanus. Two hours attendance. Two hours credit. First semester. Wallace

26. **Shakespeare**—Course 25 continued. Romeo and Juliet, Twelfth Night, King Lear. Second semester.

27. **English Ballads**—Introduction to the study of popular poetry. Reading of selected ballads of England and Scotland, with some references to ballads in other literatures. The ballad revival in the eighteenth century. Modern imitative ballads. One hour attendance. One hour credit. First semester. Pound

28. **English Lyric Poetry**—Nature of the lyric. Survey of leading lyric kinds and types; ballads, sonnets, odes, elegies, etc. History of the English lyric. Two hours attendance. Two hours credit. First semester. Pound

29. **Methods of Instruction in Secondary English**—A practical study of the synthetic, interpretative and technical phases of presenting this subject in secondary grades. Special attention given to outlining of courses, development of material, selection of books for school libraries and home readings. Experience in the preparation and presentation of topics will be gained in connection with the Teachers College High School Practice Course in Teaching English. Lectures, written reports, observation reports, criticism, library readings. Prerequisite: English Literature courses 1, 2, 11, 12; Rhetoric 3, 4. Two hours attendance. Two hours credit. First semester. Stuff

29a. **Methods of Instruction in Elementary English**—Open to all preparing to teach English in the elementary grades. Prerequisite: English Literature 1, Rhetoric 1. Two hours attendance. Two hours credit. First semester. Stuff, Clark

30. **Methods of Instruction in Secondary English**—Course 29 continued. Prerequisite: English Literature 1, 2, 11, 12, 17, 29. Two hours attendance. Two hours credit. Second semester. Stuff

31. **Teachers' Training Course**—Daily training in teaching. Study of problems arising from actual conditions in the classroom. One teachers' conference each week. Prerequisite: English Literature 1, 2, 11, 12, 29, 30. Two hours credit. May be registered for twice. First and second semesters. Stuff

32. **Seminary**—Advanced study of problems in teaching English in advanced, secondary and elementary grades. The field affords opportunity for individual research. The course includes investigation of existing conditions. Two hours attendance. Two hours credit. First semester. Stuff

32a. **Seminary**—Course 32 continued. Two hours attendance. Two hours credit. Second semester. Stuff

33. **Principles of Dramatization**—Construction in the drama of Shakespeare, Moliere, Schiller, Goethe and Victor Hugo. Two hours attendance. Two hours credit. First semester. Scott

34. **Principles of Dramatization**—Course 33 continued. Construction in the drama of Corneille, Calderon, Goldoni, Maeterlinck, Ibsen and in the classic drama. Second semester. Scott

35. **Advanced Old English**—Open to students who have a working knowledge of the language. The special mode of study varies according to the needs or equipment of the class. Serves often as an introduction to comparative Teutonic philology. Outline of general phonetics included if necessary. Preceding or accompanying study of Gothic and Old High German recommended. Two hours attendance. Two hours credit. First semester. Pound

36. **Advanced Old English**—Course 35 continued. Second semester.

37. **History of Old English Literature**—Reading of texts in translation. Study of textual and manuscript criticism, disputed readings, dates, problems of authorship and interpolation, historical and mythological elements, history of opinion, etc. One hour attendance. One hour credit. First semester. Pound

38. **History of Old English Literature**—Course 37 continued. Second semester.

38a. **Chaucer**—Literary and linguistic studies. Informal lectures on contemporary fourteenth century life and literature. Two hours attendance. Two hours credit. Second semester. Pound

39. **Play Construction**—Intended for specially qualified students who wish to work along the lines of practical play writing. An intensive study of the fundamental principles of the acting drama and an application of these principles in original construction and criticism. Primarily, a writing and practice course, including the guidance of the student not only thru the making of a producible play but its actual stage presentation. Admission by consent of the instructor. Two hours attendance. Two hours credit. First semester. Scott

40. **Play Construction**—Course 39 continued. Two hours attendance. Two hours credit.

41. **Poetic Forms**—Two hours attendance. Two hours credit. First semester. Sherman

42. **Poetic Forms**—Course 41 continued. Second semester.

43. **Seminary in Criticism**—Two hours attendance. Two hours credit. First semester. Sherman

44. **Seminary in Present Literary Forms and Tendencies**—Two hours attendance. Two hours credit. Second semester. Sherman

45. **Celtic Sentiment and Thought in Its Relation to English Literature**—A survey of early Irish and Welsh literature with special study of the Arthurian sources. Admission on consent of the instructor. Two hours attendance. Two hours credit. First semester. Stuff

46. **Celtic Sentiment and Thought in Its Relation to English Literature**—Course 45 continued. Celtic influence upon the English romantic movement. Two hours attendance. Two hours credit. Second semester. Stuff

47. **Contemporary Drama**—Studies in the construction and criticism of the modern play. Admission on approval of instructor. Two to three hours credit. First semester. Scott

48. **Contemporary Drama**—Course 47 continued. Second semester.

49. **Literary Art of Today**—Study of the great prosaists in Scandinavian, Russian, French, German and Italian as well as English and American literatures. Prerequisites: Courses 1 and 2. Two or three hours credit. First semester. Scott

50. **Literary Art of Today**—Course 49 continued. Second semester.

[51]. **The Mediaeval Drama**—Evolution of dramatic instinct in primtive men, savage tribes and civilized peoples. Development of the mediaeval liturgical drama. Origins and growth of mysteries, miracles and moralities in England and continental Europe. Studies of text and

form. Two hours attendance. Two hours credit. First semester. Not given in 1918-1919. Wallace]

[52. **Pre-Shakespearean Drama**—Development of the new English drama from the beginning of the Tudors up to Shakespeare, Court influences, Children actors. Extensive readings of the plays and study of court, people and conditions that made a Shakespeare possible. Based on the instructor's Evolution of the English Drama up to Shakespeare, and unpublished results of research. Two hours attendance. Two hours credit. Second semester. Not given in 1918-1919. Wallace]

[53. **Seminar**—Studies in the Tudor-Stuart drama. Investigations of special topics. Methods of scientific research. Consultations and formal reports. Admission upon approval of instructor. Two hours attendance. Two hours credit. First semester. Not given 1918-1919. Wallace]

[54. **Seminar**—Course 53 continued. Direction of individual studies in the drama, novel, short story and other literary forms. Modern scholastic methods of research. Two hours attendance. Two hours credit. Second semester. Not given 1918-1919. Wallace]

55. **Thesis Seminar**—General direction of candidates for degrees in the department in finding and organizing materials for theses. General bibliographical helps, and methods of research. Formal reports before graduates and departmental professors in common co-operation. Required of all candidates for advanced degrees. One hour attendance. One hour credit. Wallace

56. **Thesis Seminar**—Course 51 continued. Required of candidates for advanced degrees. One hour attendance. One hour credit. Wallace

ENTOMOLOGY

Professor Bruner *(Head of Department)*, Professor Swenk, Assistant Professor Dawson

The department maintains a laboratory fully equipped for the use of students engaged in research work along systematic lines, and a modern insectary well provided with apparatus useful in facilitating research in economic entomology, such as breeding cages, cameras, dark room and aquaria, for those investigating the life-histories of insects. The research laboratory is supplied with compound and dissecting microscopes, microscopical accessories, camera lucida, lanterns and slides and illustrative models and charts. A collection of insects numbering approximately 270,000 pinned specimens is available for study by

advanced students; it is particularly rich in Hymenoptera, Diptera and Orthoptera and contains many specimens of these orders named by specialists, including a considerable number of their types. While the greater portion of the collection is representative of our state and national fauna, it is also exceedingly rich in exotic material from Argentina, Costa Rica, Mexico and the Philippine Islands collected by Professor Bruner on entomological excursions to these countries. The library contains practically complete files of all the American and the principal foreign entomological periodicals as well as most of the special monographs in the various orders, and is readily accessible to advanced students, while the excellent economic libraries of the State Entomologist and Nebraska Experiment Station are close at hand and available for reference. The results of studies carried on in the department are issued consecutively in a numbered series.

Courses 1 and 2 or 3 and 4 are open to all students, and they, or their equivalent, must precede all other college courses in entomology except 7, 7a, 8, 9, 10 and 11.

COURSES

(These courses may be registered for repeatedly until the completion of the problem.)

14. **Seminary**—The seminary work of the department is carried on by the Nebraska Entomological Society, an association of students specializing in entomology and taking advanced or graduate courses, meeting at intervals for the presentation of papers and the discussion of current entomological literature.

15. **Research in Systematic Entomology**—Independent studies under the advice of the head of the department leading to the monographing of some genus, subfamily or family of insects or the detailed study of the insect faunt of Nebraska in one of the larger groups. First semester. Bruner

16. **Research in Systematic Entomology**—Course 15 continued. Second semester.

17. **Research in Economic Entomology**—Individual investigation of some special problem in economic entomology, usually the monographing of a species or group of species of economic importance. First semester. Bruner

18. **Research in Economic Entomology**—Course 17 continued. Second semester.

EUROPEAN HISTORY

Professor Fling *(Head of Department)*, Associate Professor Pfeiffer, Assistant Professor Needham

The department offers excellent opportunities for graduate study on the French revolution and the Napoleonic era. The collection of

sources and secondary works upon the early revolution is the best in the country. On the Napoleonic era the department has recently acquired the valuable Oncken collection of manuscripts, containing the official correspondence of the most distinguished English diplomats during the years 1812-1815 inclusive. Each year special courses and seminaries are offered on the French revolution and the Napoleonic era. In the seminaries, the student is introduced in a critical way to the best sources and investigations are begun that may lay the foundation for research work abroad. To take advantage of these courses, the student should have had general courses on the French revolution and the Napoleonic era, some undergraduate training in the use of sources, and should have acquired a reading knowledge of French. With such a preparation, it is possible to take the master's degree in one year. When the student is not properly prepared, the training may be secured in the undergraduate course offered by the department. This preparatory work may be done in one year, if the student has already acquired in undergraduate courses a fair working knowledge of European history.

Master of Arts—Second Minor: At least eight hours of graduate work; two years of undergraduate work are required before graduate work can be entered. First Minor: Same as 1, 2, 3 and 4 for major. Major: (1) an acquaintance with the history of Europe from the beginning of Greek history to 1914; (2) a knowledge of the literature of European history, consisting of the best known sources of English, French and German, and the most important works of secondary writers; (3) an acquaintance with bibliographical aids and historical atlases; (4) a theoretical knowledge of the methods of historical research; (5) a thesis based on the sources.

COURSES

17. **The French Revolution**—Open to students who have had one year's work in the department. Two hours attendance. Two hours credit. First semester. Fling

18. **The Napoleonic Era**—The requirements are the same as for course 17. Two hours attendance. Two hours credit. Second semester. Fling

[19. **Europe in the Nineteenth Century**—The requirements are the same as for course 17. Two hours attendance. Two hours credit. First semester. Not given in 1918-1919. Fling]

[20. **Europe in the Nineteenth Century**—Course 19 continued. Second semester. Not given in 1918-1919.]

23. **Seminary on the French Revolution**—One hour attendance. One hour credit. First semester. Fling

24. **Seminary on the French Revolution**—Course 23 continued. Second semester.

59. **Seminary on Napoleonic Period**—One hour attendance. One hour credit. First semester. Needham

60. **Seminary on Napoleonic Period**—Course 59 continued. Second semester.

69. **Seminary on the Legislative Assembly**—One hour attendance. One hour credit. First semester. Pfeiffer

70. **Seminary on the Legislative Assembly**—Course 69 continued. Second semester.

25. **Historical Methods**—Detailed lectures on the problems of historical research and construction, accompanied by readings in the best English, French and German monographs and by practical exercises. One hour attendance. One hour credit. First semester. Fling

26. **Historical Methods**—Course 25 continued. Second semester.

49. **Seminary on French Revolution**—One hour attendance. One hour credit. First semester. Fling

50. **Seminary on French Revolution**—Course 49 continued. Second semester.

57. **The Convention**—Our hour attendance. Onehour credit. First semester. Fling

58. **The Convention**—One hour attendance. One hour credit. Second semester. Fling

[61. **The Italian Renaissance**—Two hours attendance. Two hours credit. First semester. Not given in 1918-1919. Pfeiffer]

[62. **The Unification of Italy**—Two hours attendance. Two hours credit. Second semester. Not given in 1918-1919. Pfeiffer]

[63. **The German Reformation**—Two hours attendance. Two hours credit. First semester. Not given in 1918-1919. Needham]

[64. **The Unification of Germany**—Two hours attendance. Two hours credit. Second semester. Not given in 1918-1919. Needham]

65. **Medici and the Renaissance at Florence**—Two hours attendance. Two hours credit. First semester. Pfeiffer

66. **Cavour and the Struggle for Italian Unity**—Two hours attendance. Two hours credit. Second semester. Pfeiffer

67. **The Thirty Years War**—Two hours attendance. Two hours credit. First semester. Needham

68. **Frederick the Great**—Two hours attendance. Two hours credit. Second semester. Needham

FARM MANAGEMENT

Professor Filley *(Head of Department)*, Assistant Professor Spafford, Assistant Professor Hendricks, Assistant Professor Medlar, Mr. Rhoades

Farm Management is the business side of farming. It deals with the problems which confront every farmer in the organization and management of his farm. The farm is considered a business investment from which the owner and operator wish to secure the greatest continuous profit.

COURSES

1. **Farm Documents**—This course deals with the legal phase of the farm business. Contracts, leases, deeds, mortgages, abstracts, negotiable instruments and other legal papers of which the farmer should have a working knowledge are discussed. Some time is given to those parts of the Nebraska law, such as the provisions regarding live stock and labor, which bear most directly upon farm management problems. Open to all but freshmen. Two hours attendance. Four hours preparation. Two hours credit. First semester. Rhoades

2. **Farm Accounts**—A practical system of cost accounts for the farmer. Each student keeps a set of books which shows the cost of the various farm operations for the year, and the gain or loss upon each farm enterprise. Open to all but freshmen. Two hours lecture. Two hours laboratory. Two hours outside preparation. Two hours credit. Second semester. Rhoades

3. **Farm Organization**—Types of farming and their adaptation to different regions, size of the farm unit, capital, labor, systems of land tenure, maintenance of soil fertility, cropping systems, the farmstead, field arrangements, choice and purchase of a farm, and other factors of farm organization which affect farm profits are studied. Work based on text books, bulletins and Nebraska farm management survey records. Open to juniors, seniors, graduates, to second year men in the agricultural practice group, and to others by permission. Graduates of the School of Agriculture who have credit for Farm Management A may register for the course for two hours credit. Three hours attendance. Two hours laboratory. Four hours outside preparation. Three hours credit. First semester. Spafford, Medlar

4. **Farm Management Seminar**—Prerequisite: Course 3. A continuation of course 3, dealing with specific problems in Farm Management. Each student investigates and reports upon some particular problem. Three to fifteen hours meeting, preparation and library. One to five hours credit. Second semester.

Filley, Spafford, Rhoades, Medlar

11. **Marketing of Farm Products**—This course deals with such problems as producers' and consumers' prices, wholesale and retail marketing, competition and cooperation. The marketing of cereal crops is studied in detail, the grain being traced from producer to consumer. This includes the study of the farmers' elevator movement, railway rates, grain exchanges, grain warehouses and other factors affecting prices. Open to juniors, seniors, graduates, second year men in the Agricultural Practice Group and others by permission. Two hours attendance. Four hour preparation. Two hours credit. First semester. Filley, Spafford

12. **Marketing of Farm Products**—Course 11 continued. The marketing of live stock and live stock products is studied in detail. Different types of animals are traced from the farm to the consumers' table. The latter part of the semester is devoted to a study of the retail store. Two hours credit. Second semester.

Filley, Spafford

7. **Farm Management Survey**—Prerequisite: Courses 3 and 4. Field work, tabulation and analysis of data. It is designed to train students for field work and to give them a first hand knowledge of Nebraska farm conditions. Field work may be done during vacation. Admission by consent of the instructor. Three to fifteen hours meeting, field work, tabulation of data and library. One to five hours credit. First semester. Filley, Spafford

8. **Farm Management Survey**—Course 7 continued. Second semester.

GEOGRAPHY AND CONSERVATION

State Conservation and Soil Survey

Professor Condra *(Head of Department)*, Professor Bengtson, Professor Brownell, Professor Loveland, Miss Nelson

Thru cooperation with other departments this department offers preparation for work in Soil Survey and in Real Estate. The needed courses may be grouped to correlate with the general requirements of the Colleges of Agriculture and of Arts and Sciences so as to afford specialization along the above lines during the sophomore, junior and senior years. Students wishing to take advantage of this training should elect their Major in the department of Geography and Conservation, and on first consultation with the departmental adviser should indicate which one of the vocational lines he intends to follow. Grad-

uate instruction leading to the second and third degrees is offered. Theses are based on original work done in the laboratory and field.

The State Conservation and Soil Survey is directed from this department.

This survey as defined by the statutes of the state, covers soil, forest, road materials, water resources and industries of the state. To it is also given the duty of making such land investigations as are found necessary under the "Blue Sky" law. It is in the charge of the Board of Regents and under the advisory authority of the State Conservation and Welfare Commission.

The Soil Survey is conducted on a basis of cooperation between the national government and the state. This relation gives opportunity for practical training in advanced work and also for the employment of some advanced students in state service.

COURSES

12. **Laboratory Course in Regional Geography**—Intensive study of selected regions of the United States designed to furnish students the preparation necessary for accurate independent work. Two hours credit. Second semester. Bengtson

17. **Seminar**—Primarily for graduate students. Special research problems. Credit determined by results and time. First semester. Department Staff

18. **Seminar**—Course 17 continued. Second semester.

23. **Soil Survey**—A field course in practical soil classification, description and mapping. The methods used in state and national surveys exemplified. Designed for Agriculture, Engineering and special students, preparing for work on State or Federal soil surveys. Autos are used for field reconnoissance. Open to advanced students registered by permission. Two hours credit. First and second semesters. Condra, Bengtson

24. **Soil Survey**—Course 23 continued.

GEOLOGY

Professor Barbour *(Head of Department)*, Associate Professor Schramm, Assistant Professor Barbour, Assistant Professor Webster, Mr. Ellis

COURSES

34. **Economic Geology**—A study of the commercial ore minerals, their occurrence, distribution and economics, with special emphasis upon the ores of iron, copper, zinc, lead, gold and silver. Two hours attendance. Four hours laboratory and library. Two hours credit. Second semester. Schramm

35. **Economic Geology**—A study of the non-metallic minerals, coal, oil, gas and other hydro-carbons, building stones, clay, cements, saline and associated substances, fertilizers, abrasives, minor minerals, precious stones and underground waters. Four hours laboratory and library. Two hours credit. First semester. Schramm

35a. **Economic Geology**—Course 35 continued. Four hours laboratory and library. Two hours credit. Second semester. Schramm

43. **Clays**—An elementary study of the origin, properties, classification, distribution, uses and economics of clays. Two hours credit. First semester. Ellis

15. **Mineralogy**—Blow-pipe analysis of minerals. One, two or three hours attendance. Two, four or six hours laboratory. One, two or three hours credit. First and second semesters. Schramm

16. **Mineralogy**—Course 15 continued. First and second semesters.

17. **Crystallography**—Crystallographic forms and measurements, mathematical relations, physical and optical properties, One hour attendance. Two hours laboratory. One hour credit. First and second semesters. Barbour, Webster

27. **Field Geology**—Study of structure and stratigraphy of type sections in carboniferous, cretaceous and recent deposits in southeastern Nebraska. Mapping, photographing and sectioning quarries, clay and gravel pits; collecting and studying characteristic fossils. Economic study of brick plants, crushers, dredges, concrete establishments and drainage canals. Finished report from field notes. One or two hours attendance. Two or four hours field and laboratory. One or two hours credit. First and second semesters.

Schramm, Barbour

12. **Local Paleontology**—Special problems. Designed primarily for graduate students. Credit conditioned on results. First and second semesters. Barbour

19. **Index Fossils**—A study of index fossils for stratigraphic determination. One hour attendance. Two hours reading. Three hours laboratory. Two hours credit. First and second semesters.

Barbour, Webster

GERMANIC LANGUAGES AND LITERATURES

Professor Fossler *(Head of Department)*, Professor Grummann, Associate Professor Schrag, Assistant Professor Alexis, Assistant Professor Chamberlain

MASTER OF ARTS

In order to prosecute graduate studies successfully the student should have had preliminary training in German in at least 30 college hours. These 30 hours must represent work covered in courses 5 to 20.

In general, a combination of philological and advanced literary work will prove most suitable to the needs and satisfactory progress of the student. Occasionally a greater degree of specialization, either in linguistics or literature, may be desired and will be permitted, if the student has the necessary preliminary training.

The following courses are suggested as suitable subjects for a Major:

FIRST SEMESTER

	Hours
1. Phonetics	1
2. Gothic	2
3. Any Advanced Literature Course, not already taken	3
4. Comparative Germanic Philology	3
5. Modern Literature Seminar	2
6. History of German Literature	3

SECOND SEMESTER

1 Principles of Linguistic History	2
2. Critical Study of Lessing and his work or History of German Literature (continued)	3
3. Old and Middle High German	3
4. Modern Literature Seminar	2
5. Thesis	2

Coordinate Minors may be chosen either from the more advanced undergraduate courses in the department of German or from other departments such as Latin, the Romance Languages, English and English Literature, History, Philosophy, Education. In all such cases the work elected must be rated by the department concerned as constituting graduate or advanced undergraduate work. The total Minors for both semesters should represent from 8 to 12 semester hours, and must be chosen with the consent of this department.

COURSES

11, 12. **Fourth Year—Advanced Literature**—The entire year is devoted to a study of the life and works of Goethe: (a) Pre-Weimar period, Goetz von Berlichingen, Werther, Iphigenie; (b) Italy and post-Italian literary activity; (c) Faust, Tasso. Specially strong students are encouraged to supplement the work of the lecture room by preparing individual reports on various phases of the poet's life and art. Supplementary readings required of all in Grimm, Bielschowsky, Meyer, Thomas, etc. Each course three hours attendance. Three hours credit. Fossler

13, 14. **Fourth Year— The Modern Novel and Drama**—Representative works of Hauptmann, Sudermann, Fontane, Kretzer, Halbe,

Wildenbruch, Fulda and others. Lectures, readings, and reports. Each course three hours attendance. Three hours credit.

Grummann

13a, 14a. The principal dramas of Hauptman, Sudermann and Halbe in English translation. Lectures once a week on the development of the modern German drama. Two hours attendance. Two hours credit. Grummann

[15, 16. **History of German Literature**—From the origins to the middle of the Eighteenth Century. Besides reading representative portions of authors or periods under consideration, students are required to familiarize themselves with works of reference such as Scherer's History of German Literature, Franke's Social Forces in German Literature, Kluge's Deutsche National-Litteratur, or Biese's Litteratur Geschichte. Lectures, readings and reports. Three hours attendance. Three hours credit. First and second semesters. Not given in 1918-1919. Schrag]

17. **Germanic Mythology**—A study of the more important Germanic myths, their origin and relation to folk-lore. Two hours attendance. Two hours credit. First semester. Grummann

21. **Phonetics**—The work is based mainly upon Siever's Phonetik. One hour attendance. One hour credit. First semester.

Grummann

22. **Old and Middle High German**—Selections from the older literature. Prose and verse. Selections from the Nibelungenlied, Wolfram von Eschenbach, Walther von der Volgelweide, Hartmann von Aue, etc. Transition stages between the Middle and the New High German. Three hours attendance. Three hours credit. Second semester.

Grummann

23. **Comparative Germanic Philology**—The fundamental principles of linguistic science, with special reference to the prehistoric relationship, and historical development and differentiation of English and German. Three hours attendance. Three hours credit. Fossler

24. **Principles of Linguistic History**—The work is based principally upon Diekhoff's The German Language, and Behagel's Die deutsche Sprache. Two hours attendance. Two hours credit. Second semester.

Grummann

Scandinavian Languages and Literatures

9. **Life and Culture in the Scandinavian Countries**—A study of the public and private life of the Scandinavian peoples in modern times. Their means of subsistence, government, family relations, religion, schools, relations to foreign countries, railways, canals and kindred

subjects will be considered. Lectures in English, illustrated by lantern slides, with assigned readings in the originals or in translation. One hour attendance. One hour credit. First semester. Alexis

10. **Old Norse (Icelandic)**—Kahle's Altislandisches Elementarbuch. Mogk's Gunnlaugs saga ormstungu. Two hours attendance. Two hours credit. Second semester. Alexis

GREEK HISTORY AND LITERATURE

Professor Lees *(Head of Department)*

Masters of Arts—Requirements vary somewhat according to the preceding work of the student, but at least three years of study in the Greek language, including courses 1, 2, 3, 4, 5, 8 or their equivalents, should be completed before proceeding to graduate work. Majors and minors are arranged with each graduate student on consultation with the instructor. The following statements may indicate in general the requirements for majors and minors:—Major: At least five hours for a year of classroom work; the entire Iliad or Odyssey read in the original; one Attic author carefully read and style mastered; a thoro knowledge of the history and development of Greek literature from Homer to Aristotle; a thesis. First Minor; Six hours, at least, of classroom work from courses open to graduate students; supplemented by assigned library readings. Second Minor: One-half of the amount required for a first minor.

COURSES

7. **The Greek Drama—Aeschylus**—The Prometheus Bound, and one other drama. A discussion of the works and literary characteristics of Aeschylus. Three hours attendance. Three hours credit. First semester. Lees

8. **Sophocles**—The Antigone, and one other drama. Greek actors, costumes and theatre. Three hours attendance. Three hours credit. Second semester. Lees

9. **Euripides**—Two dramas read in the original. Style and literary characteristics of Euripides. Two hours attendance. Two hours credit. First semester. Lees

10. **Aristophanes**—The Clouds and Frogs. Rise and development of Athenian comedy. Its relation to Roman and later comedy. Two hours attendance. Two hours credit. Second semester. Lees

12. **The Greek Orators**—Selected orations of Lysias and Demosthenes. Two hours attendance. Two hours credit. First semester. Lees

14. **Lyric Poetry**—Selections from the leading Lyric poets. Two hours attendance. Two hours credit. Second semester. Lees

15. **Greek Philosophy**—The Phaedo of Plato. A survey of Greek Philosophy. Two hours attendance. Two hours credit. First semester. Lees

16. **Lucian**—Selected dialogs. An outline history of Greek Literature from Homer to the second century A. D. Two hours attendance. Two hours credit. Second semester. Lees

[19. **New Testament Greek**—Selection from the Gospels. Two hours attendance. Two hours credit. First semester. Not given in 1918-1919.]

[20. **New Testament Greek**—Course 19 continued. Pauline Epistles. Second semester. Not given in 1918-1919.]

Sanskrit

The following courses in Sanskrit and comparative philology are open to advanced and graduate students. Altho they are intended primarily for graduate students in either ancient or modern languages, yet they may be profitably pursued by any advanced and aspiring student who desires to secure a broader basis for special study in his chosen linguistic field.

The aim of the work in Sanskrit is to give the student such a knowledge of basic grammatical forms and syntactical structure as to assist him greatly in the comprehension and mastery of similar phenomena in all our European languages.

COURSES

1. **Beginners' Course**—Inflections and conjugations. Whitney's Sanskrit Grammar and interpretation of an easy text. Two hours attendance. Three hours credit. First semester. Lees

2. **Elementary Sanskrit**—Selected readings from the Nala and the Hitopadeca as given in Lanman's Sanskrit Reader. Two hours attendance. Three hours credit. Second semester. Lees

3. **Sanskrit**—Selections from the Hitopadeca and the Manava Dharmacastra. One hour attendance. Two hours credit. First semester. Lees

4. **Sanskrit**—Reading and interpretation of selected hymns of the Rig-Veda. One hour attendance. Two hours credit. Second semester. Lees

Comparative Philology

The courses in comparative philology do not require nor presuppose a knowledge of Sanskrit.

5. **The Elements of Linguistic Science**—Comparative philology of the more familiar divisions of the Indo-European family of languages.

Lectures and discussions. One hour attendance. One hour credit. First semester. Lees

6. **The Elements of Linguistic Science**—Course 5 continued. Second semester.

HOME ECONOMICS

Professor Loomis *(Head of Department)*, Associate Professor Vance, Assistant Professor Cranor, Assistant Professor Fedde, Miss Canfield, Miss Curtiss, Miss Bowen, Miss Ahrens, Miss Lacey

COURSES

105. **Advanced Problems in Food Study**—Lectures, conferences, library, and laboratory work on problems in the preservation and preparation of food. Prerequisite: Bacteriology 2a, Chemistry, Home Economics 3 and 4. Three to four hours credit.

106. **Dietetics**—Additional reference and conference work with individual problems in the study of actual dietaries and the planning of dietaries to meet the various needs. To be taken in connection with or following Home Economics 6. Graduate credit only. It is recommended that students registering for Home Economics 6 and 106 register also for Plant Pathology and Physiology 117 and 118, Comparative Physiology, and Agricultural Chemistry. Two to four hours credit.

117, 118. **Seminary on Home Economics Education**—A study of the development of Home Economics, with particular attention to the correlation of these with other subjects; the articulation of Home Economics work in the various grades of schools; the consideration of courses of study now in use; and the planning of courses that will meet the growing demand for vital, flexible, well balanced courses. Prerequisite: 24 hours undergraduate work in this department, educational courses sufficient to entitle student to State Certificate, and successful teaching experience in Home Economics. Two hours credit.

HORTICULTURE

Professor Howard *(Head of Department)*, Associate Professor Hood, Associate Professor Cooper, Assistant Professor ————

COURSES

7. **Horticultural Problems**—Assigned problems in Horticulture. Experimental work in the laboratory, gardens, greenhouses or orchards, planning experiments and keeping records. Hours for consultation. Two to five hours credit. Registration only by permission of Instructors. First semester. Howard, Hood, Cooper, ————

8. **Horticultural Problems**—Course 7 continued. Second semester.

10. **Genetic Seminar**—This course is given with a view of reviewing the experimental work in genetics. Prerequisite: Animal Husbandry 7 or Horticulture 25 or Zoology 32. One hour attendance. Two hours preparation. One hour credit. Second semester.

Howard

19. **Systematic Pomology**—This course takes up in detail the systematic classification, nomenclature and discussion of tree, vine and bush fruits with the histories, origin and adaptability of each. The laboratory consists of the examination and classification of the various fruits. Prerequisite: Course 2. Two hours attendance. Four hours laboratory. Three hours preparation. Three hours credit. First semester. Cooper

23. **Landscape Design**—Topographical surveys and mapping with special reference to the methods used in landscape gardening; relation of topographic maps to landscape design; grading plans and working drawings, road and grade design. Design of school grounds, small parks, golf courses and the larger estates. Students should have preparation in systematic botany, plane surveying, mathematics and free-hand drawing. Prerequisite: Courses 20, 21 and 22. Six hours laboratory. Three hours preparation. Three hours credit. First semester.

24. **Landscape Design**—Course 23 continued. Second semester.

25. **Principles of Plant Breeding**—An elementary study of the principles underlying plant improvement, a study of the methods involved in applying the principles of heredity to the improvement of horticultural plants. Practice in the technique of crossing. Prerequisite: Botany 1 and 2 or Plant Pathology and Physiology 101 and 102 or Zoology 11 and 12. Two hours attendance. Four hours preparation and library. Two hours credit. First semester. Howard

JURISPRUDENCE AND PUBLIC LAW

Professor Hastings *(Head of Department)*, Professor Maxey

Master of Arts—Complete courses, or major or minor courses, are arranged upon application.

Master of Laws—A candidate for the degree of Master of Laws must have received the degree of Bachelor of Laws from this University or from some approved law school, must complete an additional year's work of at least 16 hours a week in the College of Law or the Graduate College or both, and must present a suitable thesis embodying the result of original investigation and research. Before such

student shall be entitled to the degree he must complete all the courses, elective as well as required offered in the College of Law for the degree of Bachelor of Laws.

COURSES

Jurisprudence

1. **History and System of the Common Law**—General survey of the legal system of English-speaking countries; courts, their organization and jurisdiction. Students taking this course should have had English History. Credited in the College of Law. Two hours attendance. Two hours credit. First semester. Hastings

2. **Roman Law**—History and Institutes. Credited in the College of Law. Two hours attendance. Two hours credit. First semester. Given in 1918-1919 and alternate years. Maxey

3. **Analytical and Historical Jurisprudence**—Introduction to legal theory. Credited in the College of Law. Three hours attendance. Three hours credit. Second semester. Maxey

Public Law and Diplomacy

1. **American Constitutional Law**—Cases on constitutional law. Credited in the College of Law. Two hours attendance. Two hours credit. First semester. Students taking this course should have had American History. Hastings

2. **American Constitutional Law**—Course 1 continued. Cases on constitutional law. Prerequisite: Course 1. Credited in the College of Law. Three hours attendance. Three hours credit. Second semester. Hastings

3. **American Administrative Law 1**—Law of public officers; extraordinary legal remedies. Credited in the College of Law. Two hours attendance. Two hours credit. First semester. Maxey

4. **American Administrative Law II**—Course 3 continued. Taxation. Credited in the College of Law. Two hours attendance. Two hours credit. Second semester. Maxey

6. **International Law I**—Credited in the College of Law. Three hours attendance. Three hours credit. First semester. Maxey

7. **International Law II**—Advanced course. Specific problems of international law. Credited in the College of Law to students who do not count International Law I. Two hours attendance. Two hours credit. Second semester. Maxey

8. **European Diplomacy**—Two hours attendance. Two hours credit. First semester. Maxey

9. **Comparative Constitutional and Administrative Law**—Comparative study of public law of the United States, England, Canada, and

Australia. Two hours attendance. Two hours credit. First semester. Given in 1918-1919 and alternate years. Maxey

10. **American Diplomacy**—[American History 22] Organization. Main diplomatic controversies. Two hours attendance. Two hours credit. Second semester. Maxey

11. **Seminary on Consular Service**—Admission upon consent of the instructor. Two hours attendance. Two hours credit. Second semester. Given in 1918-1919 and alternate years. Maxey

MATHEMATICS

Professor Candy *(Head of Department)*, Professor Engberg, Professor Brenke, Assistant Professor Blumberg, Assistant Professor Runge, Assistant Professor Babbitt

Required Undergraduate Courses—Courses 1, 2a, 3a, 4a and 4b or courses 1, 2, 3 and 4, or their equivalents, are prerequisite for all graduate work.

MASTER OF ARTS

Candidates for the degree of Master of Arts with their major work in mathematics are required to complete 36 hours of advanced work beyond that required for a "Departmental Major," which includes courses 1, 8, 2a, 3a, 4a, 4b, 20a and 8 hours electives, or the equivalent of such courses, with a total of 29 hours of undergraduate credit. At least 20 hours of the 36 must be mathematics, and the rest may be selected from the departments of physics, astronomy and philosophy.

Candidates must further present an acceptable thesis representing the equivalent of not less than 8 credit hours.

DOCTOR OF PHILOSOPHY

The candidate must have not only an extended general knowledge of mathematics on the basis of the requirements for the degree of Master of Arts, but must also devote special attention to some line of modern research, consulting both standard treatises and the various mathematical journals. The results of this work are to be presented and discussed from time to time in the mathematical seminary and finally embodied in a thesis.

COURSES

7. **Theory of Probability**—Three hours attendance. Three hours credit. Second semester. Engberg

10. **Higher Algebra**—Selected topics in Algebra. Two or three hours credit. First semester. Blumberg

11. **Higher Algebra**—Course 10 continued. Second semester.

12. **Theory of Functions**—Three hours attendance. Three hours credit. First semester. Brenke

13. **Theory of Functions**—Course 12 continued. Second semester.

14. **Elliptic Functions**—Three hours attendance. Three hours credit. First semester.

15. **Elliptic Functions**—Course 14 continued. Second semester.

16a. **Harmonic Analysis**—Applied to the Partial Differential Equations of Mathematical Physics. Source of these equations. Methods of solution. Theory of Fourier's series. Other series. Three hours attendance. Three hours credit. First semester. Brenke

16b. **Harmonic Analysis**—Course 16 continued. Second semester.

17. **Theory of Infinite Series**—Two or three hours credit. Brenke

19. **Theory of Aggregates**—Two or three hours credit. Blumberg

20a. **Projective Geometry**—Two or three hours credit. First semester. Blumberg

20b. **Projective Geometry**—Course 20a continued. Two or three hours credit. Second semester.

21. **Foundations of Algebra and Geometry**—Two or three hours credit. Second semseter. Blumberg

22. **Advanced Analytical Geometry**—Prerequisite: Course 5. Three hours attendance. Three hours credit. First semester. Candy

23. **Advanced Analytical Geometry**—Course 22 continued. Second semester.

24. **Modern Geometry**—Two hours attendance. Two hours credit. First semester. Blumberg

25. **Modern Geometry**—Course 24 continued. Second semester.

27. **Reading Courses**—Study of selected topics, under the direction of a member of the department. One to five hours credit.

28. **Differential Geometry**—Two hours attendance. Two hours credit. First semester.

29. **Differential Geometry**—Course 28 continued. Second semester.

30. **Vector Analysis**—Three hours attendance. Three hours credit. First semester. Blumberg

31. **Continuous Groups**—Two or three hours credit. First semester. Brenke

32. **Continuous Groups**—Course 31 continued. Second semester.

33. **Calculus of Variations**—Three hours attendance. Three hours credit. Brenke

34. **Theory of Numbers**—Three hours attendance. Three hours credit. Second semester.

35. **Integral Equations**—Three hours attendance. Three hours credit. First semester. Blumberg

41. **Statistics**—Statistical problems. Interpretations of statistics. This course should be taken in connection with Economics 28. Prerequisite: Courses 1 and 2. Three hours attendance. Three hours credit. First semester. Engberg

42. **Insurance**—Mathematical principles of insurance, especially of life insurance. This course should be taken in connection with Economics 6. Prerequisite: Courses 1 and 2. Three hours attendance. Three hours credit. Second semester. Engberg

Biometry

The mathematical theory of evolution. A mathematical analysis of botanical and biological problems. An extended knowledge of mathematics is not necessary, altho of great aid. The work is intended primarily for advanced students in the natural sciences who can apply this work to their researches, but it is open to other students.

COURSES

45. **A Review of Preliminary Mathematics**—Followed by study of various frequency curves and applications to individual problems. Two hours attendance. Two hours credit. First semester. Engberg

46. **A Review of Preliminary Mathematics**—Course 45 continued. Studies in error correlations of frequency constants, variation, organic correlation, regression, heredity, spurious correlation and fixture of type. Two hours attendance. Two hours credit. Second semester.

47. **Studies in Organic and Fraternal Correlation and Problems in Heredity**—One hour attendance. One to three hours credit. First semester. Engberg

48. **Studies in Organic and Fraternal Correlation and Problems in Heredity**—Course 47 continued. Second semester.

MECHANICAL ENGINEERING

Professor Seaton *(Acting Head of Department)*, Professor Slaymaker, Associate Professor Rasmusen, Assistant Professor Bunting, Mr. Sjogren

COURSES

8. **Economics of Shop Production**—Discussions relating to manufacturing processes, routing of the work thru the shop, effect of shop design on shop efficiency, time systems and cost accounting. Pre-

requisite: Courses 1, 2, 3, 4 and 5. Two hours attendance. Four hours preparation. Two hours credit. Second semester. Sjogren

10. **Steam Engineering**—Elementary study of thermodynamics. Theory of heat engines. Forms and mechanism of steam machinery. Economy of operation and adaptability to a given service. Differential and integral calculus and applied mechanics required. Four hours attendance. Eight hours preparation. Four hours credit. First and second semesters. Rasmusen

11. **Steam Boilers**—Design and construction of steam boilers, furnaces, settings; their safety and economy of operation. Prerequisite: Course 10. Two hours attendance, occasional drawing. Four hours preparation. Two hours credit. First semester. Seaton

13. **Thermodynamic Applications**—Advanced study of the thermodynamics of gases and vapors and the application of the science to heat engines, air compressors, injectors, refrigerating machinery, steam turbines, etc. Prerequisite: Course 10. Three hours attendance. Six hours preparation. Three hours credit. First semester. Rasmusen

14. **Building Sanitation**—Principles of the design of plumbing systems for air, gas and water. Sanitary necessity of sewerage. Discussion of sewage disposal and drainage systems. Two hours attendance. Four hours preparation. Two hours credit. Second semester.

15. **Fuel Testing Laboratory**—Proximate analyses of coal and analyses of flue gases; determination of heating value of coal, gas and fuel oils; the testing of lubricants and friction. Six hours laboratory. Two hours credit. Second semester. Seaton

16. **Mechanical Engineering Laboratory**—Calibration of instruments, indicator practice, valve setting, efficiency tests of engines and boilers, injectors, pumps, gas engines. The measurement of power. Course 10 prerequisite or taken at the same time. One hour attendance. Eight hours laboratory. Three hours credit. First and second semesters. Seaton

17. **Mechanical Engineering Laboratory**—Complete tests of simple and compound Corliss engines, air compressors, gas engines, steam pumps and refrigerating machinery. Prerequisite: Course 16. One hour attendance. Eight hours laboratory. Three hours credit. First semester. Seaton

18. **Experimental Hydraulics**—Experiments on the flow of water thru orifices and nozzles and over weirs; the testing of hydraulic motors and pumps. Prerequisite: Civil Engineering 11. Six hours laboratory. Two hours credit. Second semester. Seaton

19. **Heating and Ventilation**—Theory and design of the various systems for heating and ventilating buildings, including hot air, hot water, steam and the plenum and vacuum systems, and central station heating. Prerequisite: Course 10. Two hours attendance. Four hours preparation. Two hours credit. First semester. ————

20. **Steam Power Plant Design**—The design of a complete steam power plant and the formulation of specifications therefor. Prerequisite: Courses 10 and 11. Occasional lectures. Six hours drawing. Two hours credit. Second semester. Rasmusen

22. **Gas Power Engineering**—The theory and design of gas, gasoline and oil engines; gas producer practice; the combustion of gaseous fuels. Prerequisite: Course 10. Two hours attendance. Four hours preparation. Two hours credit. Second semester. Seaton

24. **Power Transmission**—Transmission of power by shafting, belts, ropes, water, compressed air, gas. Course 10 prerequisite or taken at the same time. Two hours attendance. Four hours preparation. Two hours credit. Second semester. Slaymaker

31. **Hydraulic Motors and Pumping Machinery**—Theory of water-wheels, turbines, pressure engines and pumps. Analyses are made of hydraulic power plant arrangement and operation. Prerequisite: Civil Engineering 11. Three hours attendance. Six hours preparation. Three hours credit. First semester. Seaton

27. **Advanced Laboratory Investigations**—Special investigations of problems relating to steam engines and boilers, gas engines, etc. Nine or twelve hours laboratory. Three or four hours credit. First semester. Seaton

28. **Advanced Laboratory Investigations**—Course 27 continued. Nine or twelve hours laboratory. Three or four hours credit. Second semester. Seaton

30. **Advanced Investigations in Fuel Testing**—Course 15 continued. Six or nine hours laboratory. Two or three hours credit. First or second semester. Seaton

32. **Advanced Investigation in Heating, Ventilating and Air Conditioning**—Course 19 continued. Six or nine hours laboratory. Two or three hours credit. First or second semester. ————

34. **Investigations in Refrigeration**—A study in the theory, design and operation of ice and refrigerating machinery. Prerequisite: Courses 13 and 19. Occasional recitations, private investigations and consultations. Two or three hours credit. Second semester.

Seaton

PHILOSOPHY

Professor Wolfe *(Head of Department)*, Professor Alexander, Professor Hinman, Assistant Professor Hyde, Miss Anderson, Miss Burkart, Miss Rummons, Mr. Weber

The primary aim of work in Philosophy is to serve as an organizing discipline in a general education, and to correct the narrowness often incident to specialization. It is an efficient means for the development of breadth, balance, culture, and maturity. It lies nearer today than ever before, probably, to the various sciences, social, historical, biological, and physical, on the one hand, and to the requirements of practical life on the other. Students seeking to make this use of Philosophy may begin with either course 1, course 3 or course 4 as early as the first semester of the sophomore year, and should carry a course each semester thereafter, the complete program including both Psychology and General Philosophy. Third and fourth year students may also begin their work in Philosophy with any one of the following courses: 21, 30, 51. After the first introductory semester, courses from all sub-groups within the department are equally open to the student.

Another very important aim of the department is to aid in the professional training of teachers. Those who wish to secure the University Teachers' Certificate must take courses 1 and 2 in Elementary Psychology.

The department as now organized has full professors representing each main division of the subject. It is well supplied with library and laboratory facilities, and is enabled to offer ample facilities for graduate work.

Major or minor courses for advanced degrees are arranged for in Psychology, in Aesthetics, in Ethics, in Logic and Metaphysics and in History of Philosophy. No special statement of the number of hours required either for the degree of Master of Arts or that of Doctor of Philosophy need be made. Courses are outlined for each individual case in conformity with the general regulations laid down by the Graduate Faculty. Owing to the nature of philosophy as a fundamental discipline in touch with all sciences, graduate students pursuing majors in other specialties will often find a minor in Philosophy of large value.

COURSES

I. Psychology

11. **Experimental Psychology**—Chiefly laboratory work. The student learns to manipulate all standard apparatus, and becomes somewhat familiar with present laboratory problems. Methods of

investigation and of dealing with data are considered. In the second semester about half of the time is devoted to intensive investigation of some problem begun early in the year. Two hours credit. First semester. Wolfe

12. **Experimental Psychology** — Course 11 continued. Second semester.

13. **Genetic Psychology**—A comparative study of the animal mind, Readings and discussions on the methods of investigation, material accumulated and conclusions reached. Beginning with the lowest animals, evidences of intelligence are sought in several representative groups. Effort is made to realize the resemblances and differences between the mind of the higher animals and that of man. Two hours attendance. Two hours credit. First semester. Wolfe

14. **Genetic Psychology**—A study of the child mind in development. Essentially a course in the evolution of the individual. The class surveys the material of "child study" on infancy, childhood and adolescence, reviews normal psychology and studies old age. A few weeks are given to certain typical forms of abnormal mind, arrested development and genius. Two hours attendance. Two hours credit. Second semester. Wolfe

16. **Educational Psychology**—A practical study of the factors which influence the development of body and mind. May be applied on required hours in education. Attention will be given to recent studies on the learning process, the methods of mental testing and the interpretation of results, especially in cases of retardation and acceleration. Two hours attendance. Two hours credit. Second semester. Wolfe

II. Ethics

[23. **Ethical Theory**—The object of this course, running for two years, is the intensive study of dominant types of modern ethical systems. Each semester a section of the history of recent ethical debate is chosen for study, and the relevant classical works are analyzed. During 1919-1920 the development of intuitionism, utilitarianism and idealism will be examined, involving familiarity with the writings of Martineau, Bentham, Mill, Sidgwick, Kant, Green, Bradley and Taylor. Two hours attendance. Two hours credit. First semester. Hinman]

[24. **Ethical Theory**—Course 23 continued. Second semester.]

25. **Ethical Theory**—During 1918-1919 the object of study will be the evolution of man's moral nature and conduct, and the evolutionary theory of ethics. The relation of this theory to utilitarianism and to idealism will be developed, and attention given to the writings of

Darwin, Spencer, Stephen, Sutherland, Westermarck, Alexander, Wundt and Hobhouse. Two hours attendance. Two hours credit. First semester. Hinman

26. **Ethical Theory**—Course 25 continued. Second semester.

III. Metaphysics and Philosophy of Science

30. **Introduction to Philosophy**—Develops the philosophical conception of Reality as Mind, and applies it in some detail to the interpretation of the system of the sciences. Deals with such ruling ideas as those of matter, force, life, heredity, evolution, purpose, mind, reason, God. Designed to meet the needs of the scientific and general student, and to serve also as a preparation for further work in philosophy. Lectures. Three hours attendance. Three hours credit. First and second semesters. Hinman

30a. **Philosophical Themes**—Students who have taken or are taking course 30 may mature themselves in this subject and secure additional credit by preparing papers in connection with assigned topics, and carrying out the library work which these involve. No further class attendance. One to three hours credit. Hinman

33. **Advanced Metaphysics**—A systematic study of contemporary metaphysical thought, based upon an analysis of the debate between the absolute idealists and their recent critics. May be carried profitably by the student who has completed course 30. Two hours attendance. Two hours credit. First semester. Hinman

34. **Advanced Metaphysics**—Course 33 continued. Second semester.

37. **Logic of Science**—Deals with the nature of conception, judgment and inference, with reference both to general philosophical results and to the methodology of science. Two hours attendance. Two hours credit. First semester. Hinman

38. **Logic of Science**—Course 37 continued. Second semester.

44. **History of Culture**—The culture of medieval times and of the Italian Renaissance; the 18th century Enlightenment and humanitarianism; humanism of today. Three hours attendance. Three hours credit. Second semester. Alexander

V. History of Philosophy

51. **History of Philosophy**—Survey of the principal philosophical systems in their development and relation to the political and social conditions of their times. Three hours attendance. Three hours credit. First semester. Alexander

52. **History of Philosophy**—Course 51 continued. Second semester.

53. **Greek and Medieval Philosophy**—Special studies in the history of philosophy for advanced students. One session weekly. Two hours credit. First semester. Alexander

54. **Greek and Medieval Philosophy**—Course 53 continued. Second semester.

55. **Advanced German Reading**—Some philosophical or psychological work will be read in German. The purpose is to acquaint students in this department with the technical German vocabulary peculiar to his line of work and to help him to think in German as he reads. Two hours attendance. Two hours credit. First semester. Hyde

56. **Modern German Philosophy**—Course 55 continued. Second semester.

57. **German Idealism**—Kant and Hegel. First semester devoted to the Critical philosophy. Brief study of background of Criticism in English Empiricism; careful study of teachings of Kant's three Critiques. Two hours attendance. Two hours credit. First semester. Hinman

58. **German Idealism**—Course 57 continued. Development of Kantian doctrine in its idealistic phases by his successors briefly traced; culmination of post-Kantian Idealism, studied at length in Hegel's Smaller Logic. Second semester. Hinman

57a. **English Empiricism in the Nineteenth Century**—Mill and Spencer. After a brief study of Hume, the development of Empiricism will be traced in the Associational school, and its culminating phases in the philosophical views of John Stuart Mill will be analyzed in detail. Two hours attendance. Two hours credit. First semester. Hinman

58a. **English Empiricism in the Nineteenth Century**—Course 57a continued. Spencer's Synthetic Philosophy. Second semester.

VI. History and Philosophy of Religion

60. **Philosophy of Religion**—Nature and meaning of religion and grounds of religious beliefs in view of the rational interpretation of the universe made by modern science and philosophy. Origin and evolution of religion, the psychology of religion, arguments for the existence of God, modern conception of God and Immortality. One hour attendance. One hour credit. Second semester. Hinman

61. **History of Religion Among the Hebrews**—A systematic study of the religious history and literature of Israel, with the aid of the philosophical, scientific and literary auxiliaries now available. The course will be open to students who have not had previous philosophical

work; for the best results, however, it should be either preceded, accompanied or followed by course 30. Lectures and readings. Two hours attendance. Two hours credit. First semester. Hinman

62. **History of Religion Among the Hebrews** (Fuller course)—Course 61 continued. Second semester.

63. **Philosophy and Psychology of Religion**—Advanced course An extensive survey of recent literature primarily in the philosophy of religion and in the psychology of religion so far as this has an immediate bearing upon philosophical issues. Two hours attendance. Two hours credit. First semester. Hinman

64. **Philosophy and Psychology of Religion**—Course 63 continued. Second semester.

71. **Psychological Seminary**—The year will be given to the study of some problem, or group of closely allied problems, to be definitely determined by the interests of the members of the seminary. Seniors who have had 1 and 2, and who are taking 11 or 12 may elect this course. Two hours attendance. Two hours credit. First semester. Wolfe

72. **Psychological Seminary**—Course 71 continued. Second semester.

73. **Ethical Seminary**—Study of special problems in ethics. Two hours attendance. Two hours credit. First semester. Hinman

74. **Ethical Seminary**—Course 73 continued. Second semester.

75. **Seminary in Logic and Metaphysics**—Two hours attendance. Two hours credit. First semester. Hinman

76. **Seminary in Logic and Metaphysics**—Course 75 continued. Second semester.

PHYSICS

Professor Skinner *(Head of Department)*, Professor Moore, Professor Almy, Professor Tuckerman, Assistant Professor Tool, Mr. Gish, Mr. Spencer

For graduate students instruction is given in both theoretical and experimental physics. Lectures are given in the general theoretical branches and are offered on special topics in which the lecturer is immediately interested.

In theoretical physics courses 21, 22, 23, 24, 25, 26 are given in a sequence of six semesters with four hours lecture weekly, while the others are given as the occasion demands.

For the degree of Master of Arts the candidate may offer simply a major in physics, but is advised to offer also a minor in some related

subject. One year of purely graduate study may be sufficient to attain the degree.

For the degree of Doctor of Philosophy three years work, including a completed research, is required. In addition to the work in physics and mathematics the candidate must offer also a minor in either chemistry, astronomy or philosophy.

COURSES

7. **Industrial Thermometry**—Temperature measurements as applied in manufacturies and research laboratories, with special attention to pyrometry. Measurement and control of oven, furnace, ingot and ladle temperatures. Designed to give a working knowledge of modern methods for the measurement of thermal constants at all temperatures. One hour lecture. Six hours laboratory. Three hours credit. Second semester. Tuckerman

8. **Industrial Optics**—Optical measurements as applied in manufacturies and research laboratories. Theory of lenses with applications; Photometry, Spectrometry, Interferometry, and Polarimetry. Two hours lectures. Eight hours laboratory. Four hours credit. First semester. Tool

9. **Photography**—Theory and practice of photography. Adaptation of lens systems to the various photographic needs: Portrait, landscape, architectural, spectro- and microphotography, photo-engraving, etc. Study of the processes involved in exposure, development, printing, etc. Sensitometry and actinometry as applied to ordinary and color photography, Two hours lecture. Eight hours laboratory. Four hours credit. Skinner

19. **Advanced Experimental Physics**—Exact determination of physical constants, requiring a careful duplication of some classic experiments in physics, in which a single experiment is expected to cover a period of about one semester, or an introduction to research. Fifteen hours laboratory. Five hours credit. First semester.
Moore

20. **Advanced Experimental Physics**—Course 19 continued. Second semester.

Research—Original investigation of some problem in physics. No time limit imposed. Less than fifteen hours a week is not advisable.
Skinner, Moore, Tool

Theoretical Physics

21. **Dynamics of Discrete Particles**—Formal development of the general principles of mechanics: D'Alembert's Principle; Gauss' Principle of Least Constraint; Hamilton's Principle of Least Action; La

Grange's Equations; Hamilton's Canonical Equations; applications to special problems. Four hours lecture. Four hours credit. First semester. Tuckerman

22. **Elasticity and Hydrodynamics**—Elasticity: Deformations of homogeneous media, isotropic and crystalline; vibrations of isotropic media; applications to special problems. Hydrodynamics: Irrotational and vortex motions; scalar and vector potentials; application to mechanical theories of electromagnetic phenomena. Four hours lecture. Four hours credit. Tuckerman

23. **Electricity and Magnetism**—The fundamental equations of Maxwell, applied to the theory of Static, Stationary, Quasistationary and Kinetic Electromagnetic field. A short outline of Vector Analysis and Quaternions (Hamiltonian and Continental Notations) is given as an introduction. Four hours attendance. Four hours credit. First semester. Tuckerman

24. **Electro-Optics**—Electromagnetic oscillations and their application to the theory of light. Course 23 continued. Second semester. Tuckerman

25. **Thermodynamics**—The classical theory of thermodynamics and its application to certain types of physical and chemical phenomena, including heat radiation. The course concludes with a brief comparison of the classical theory with the modern statistical theories. Four hours lecture. Four hours credit. Second semester. Tuckerman

26. **Heat Radiation and Quantum Theory**—The statistical interpretation of the entropy principle and its application to Heat Radiation, leading to the introduction of Planck's "quantum." The Quantum Theory as a guiding principle in modern investigation. Four hours lecture. Four hours credit. Tuckerman

29. **Thermo- and Electro-Chemistry**—Three hours credit. One semester. Moore

30, 31. **Theory of Changes of Physical State and Chemical Constitution of Bodies**—Two hours credit. First and second semesters. Moore

32. **Electric Conduction in Gases**—Ionization; ionic velocities; cathode rays; radioactivity; electron theory. Two hours credit. One semester. Tool

Physical Colloquium—Instructors and graduate students meet weekly for presentation of short papers on the progress of their investigations and those reported in current periodicals.

PHYSIOLOGY AND PHARMACOLOGY

Professor Lyman *(Head of Department)*, Assistant Professor Day, Mr. Thompson, Miss Redford, Mrs. Westermann, Doctor Webb, Doctor Stevens, Doctor Breuer, Miss Nelson

Graduate work in physiology and pharmacology is open to those students who have completed courses 1 and 2 or 3 and who have had sufficient training in related branches and in the languages. Work leading to the degrees of Master of Arts and Doctor of Philosophy must be research of such a type as to merit publication in the standard journals. The time necessary in each case is that required by the Graduate College. Candidates will consult with the head of the department before registering.

COURSES

19. **Physiological Standardization**—An advanced course in the methods of physiological standardization. One hour attendance. Five to fourteen hours laboratory. Two to five hours credit. Second semester. Lyman, Thompson

10. **Materia Medica**—A didactic and laboratory study of the origin, natural history, preparations, and methods of using individual drugs. Two hours attendance. Two hours laboratory. Two hours credit. Second semester. Breuer

20. **Research**—Investigation of some physiological or pharmacological problem which the candidate must select after consultation with the person in charge of the department. First and second semesters. Lyman

PLANT PATHOLOGY AND PHYSIOLOGY

Professor Wilcox *(Head of Department)*, Professor Link, Associate Professor Thurston, Assistant Professor Davis

GENERAL INFORMATION

The offices, laboratories and lecture rooms are located in Plant Industry Hall. For use in the instructional work the department has a very extensive collection of lantern slides, charts, and other illustrative material. An extensive pathological herbarium and collection of economic plants are being developed as rapidly as possible. The large private library of the head of the department of Plant Pathology and Physiology, particularly complete in phytopathology, is available for the use of advanced students. A greenhouse has been arranged and specially equipped for experimental work in physiology and pathology.

A limited number of advanced students with proper training can be offered exceptional opportunities for research work in physiology and pathology. In some cases it is possible for such students to receive compensation for work done in connection with problems being investigated by the department.

The department is especially prepared to offer graduate work in pathology and physiology. To successfully undertake research work in these subjects students should have a broad training in botany, chemistry, and zoology; should be able to read French and German and should have taken at least six hours of work in this department. Before registering students should consult the head of the department.

COURSES

115. **Advanced Plant Physiology**—A detailed study of the problems of plant physiology outlined in courses 105, 106. Prerequisite: Courses 105, 106 and Chemistry 3, 4, 31 or equivalents. Three hours lecture. Six or twelve hours laboratory and preparation. Two to five hours credit. First semester. Link, Thurston

116. **Advanced Plant Physiology**—Course 115 continued. Second semester.

117. **General Plant Pathology**—A broad survey of the development and present condition of our knowledge of plant disease. Special attention will be given to such subjects as the physiology and cytology of resistance and immunity, origin of parasitism, specialization, epidemics and climatic factors, malnutrition and unfavorable chemical and physical factors. Prerequisite: Courses 105, 108, and Botany 15, 20. Three hours lecture. Six hours laboratory. Three hours credit. First semester. Wilcox

118. **General Plant Pathology**—Course 117 continued. Second semester.

125. **Problems in Plant Physiology**—Assigned problems in plant physiology. Laboratory work with hours for consultation. Two to five hours credit. First semester. Link, Thurston, Davis

126. **Problems in Plant Physiology**—Course 125 continued. Second semester.

127. **Problems in Plant Pathology**—Assigned problems in plant Pathology. Laboratory work with hours for consultation. Two to five hours credit. First semester. Wilcox

128. **Problems in Plant Pathology**—Course 127 continued. Second semester.

POLITICAL SCIENCE AND SOCIOLOGY

Professor Howard *(Head of Department)*, Professor Webster, Professor Aylsworth, Associate Professor Williams, Mr. Senning, Lecturer Sheldon

The minimum requirement for the degree of Master of Arts is one full year's work or the equivalent of about thirty class-hours, including a thesis. A candidate may devote his entire time to the work of the department; or he may divide it between a major and a minor. A minor is the equivalent of nine class-hours. The selection of courses is influenced by the character of the thesis.

The minimum requirement for the degree of Doctor of Philosophy is three full years' work, of which about three-fifths, or the equivalent of about sixty class-hours, must be given to the major subject. The remaining two-fifths of the time, or the equivalent of about forty class-hours, must be devoted to a first minor or divided equally between two second minors. The particular courses in the major subject are selected with regard to the character of the thesis and with reference to the candidate's aim and preparation. The thesis must be the result of the sustained investigation of the original materials. Without undergraduate training in thesis-writing or research courses, it is difficult to take either the master's or the doctor's degree in the minimum period. Preferably minors may be selected in the departments of economics, history or public law; but minors will be accepted in education, philosophy or other departments, according to the needs of the candidate. It all cases a good knowledge of economics and history is required.

The facilities available for graduate study and research in both political science and sociology are excellent. The libraries of the University, city, state and the State Historical Society afford the student access to an aggregate of about 312,000 volumes. The University Library contains the standard authorities and reference works on institutional history, social science, anthropology, ethnology, Roman law, historical jurisprudence, political economy, philosophy, government, politics, administration and statistics. It is especially strong in public documents and other material, source and secondary, for the investigation of problems in American government and administration. The State Library of 80,000 volumes supplements those of the University and the College of Law. It is one of the best law libraries in the West—rich in materials for a comparative study of government and legislation in the different states. In the Historical Society's collections and the public archives at the State Capitol there is accessible a mine of source material for investigating state and local government and administration in Nebraska. When these resources

prove inadequate in special investigations, desired books will be purchased or temporarily borrowed from other libraries.

The location of the University at the state capital gives special opportunities for personal observation and study of the actual problems and practical workings of state and municipal legislation and administration.

The Nebraska Legislative and Municipal Reference Bureau is now by act of the Nebraska legislature of 1911 affiliated with this department. Its library of several thousand books, pamphlets and clippings in on the campus and students are invited to make large use thereof. Several scholarships in research work for this bureau, worth from $25 upwards, are open to capable students. University credit will be given for approved work under these scholarships.

Many valuable allied courses in economics, history, jurisprudence and law are to be had in other departments.

COURSES

9. **Municipal Government**—Organization of city government in the United States and Europe. Growth of cities, the home rule movement, the municipal suffrage, the initiative and referendum, the council and executive, the municipal administrative system, the commission and the city manager plan of city government. Open to juniors, seniors and students having credit for 1 and 2. Two hours attendance. Two hours credit. First semester. Aylsworth

10. **Municipal Administration**—Functions of city administration in the United States and Europe. Origin and expansion of municipal functions, tendency toward municipal socialism, activities and problems connected with public health and safety, charities, education, reaction, public works, transportation, the "city beautiful," municipal ownership of public utilities, etc. Open to juniors, seniors and students who have taken courses 1 and 2. Two hours attendance. Two hours credit. Second semester. Aylsworth

11. **Party Government**—Organization and working of political parties in the United States. Growth of party system; the caucus and convention; the direct primary; the party committee "machine" and "boss"; legal control and responsibility of parties; campaign funds; origin and influence of third parties; relation of the "merit system," initiative, referendum, recall and "short ballot" to party government; party control of legislation and administration. Lectures, readings and reports. Open to juniors, seniors and students having credit for 1 and 2 or their equivalent. Three hours attendance. Three hours credit. First semester. Aylsworth

14. **Legal and Political Position of Women**—A general survey of the "woman's rights" movement and a study of the actual legal and

political rights of women especially in the United States. Open to juniors, seniors and students having credit for courses 1 and 2 or their equivalent. Two hours attendance. Two hours credit. Second semester. Aylsworth

15. **General Sociology**—Principles of social science. For third and fourth year students and graduates. Three hours attendance. Three hours credit. First semester. Howard

17. **Problems in Social Psychology and Ethics**—Chief psychic factors in social evolution. Laws of suggestion, mob-mind and imitation; "craze," "fad" and sect; fashion, conventionality, custom and tradition; leadership, genius, hero-worship, role of great men; social conflict, compromise, discussion, free speech, free press, public opinion; social sins, standards of private and social ethics. Theories of Le Bon, Tarde, Sidis, Ward and Ross. For third year and more advanced students. Two hours attendance. Two hours credit. First semester. Howard

19. **Primitive Religion**—An anthropological and sociological investigation, from the comparative standpoint, of the evolution of religious beliefs and rites. The subjects naturally treated in such a course are animism, or notions of the soul, the future life, and the other world, fetishism, idolatry, worship of natural objects, animals, and plants, totemism, ancestor-worship, the cult of the dead and demonism, genesis and development of the idea of God, including polytheism, dualism, and monotheism, magic, together with divination and exorcism, taboo and the ritual of purification, origin and diffusion of myths, sacrifice and prayer, sacred days and festivals, religious mysteries, and priesthoods. Such topics as the classification of religions, connections between religion and morality, factors in the development of religion, etc., receive attention. Lectures accompanied by a reference syllabus. Three hours attendance. Three hours credit. First semester. Webster

20. **Primitive Religion**—Course 19 continued. Second semester.

21. **Immigration**—General causes and conditions controlling migration; history of immigration to the United States and legislation concerning; American policy compared with the policies of other countries; naturalization laws; economic, political and social effects of immigration to America; social processes and principles involved, as segregation, stratification, assimilation; remedies needed and agencies at work. Open to third year and more advanced students. Two hours attendance. Two hours credit. First semester. Williams.

22. **Immigration**—Immigrant groups in the United States; sources; causes and dates of immigration; distribution; conventional attitude of Americans toward; influence on American history and social life;

problems peculiar to the various nationalities. Foreign elements in Nebraska; their history and influence upon the state. Open to third year and more advanced students. Two hours attendance. Two hours credit. Second semester. Williams

23. **Socialization of Education**—A discussion of the sociological aspects of education and of the training necessary to prepare the child to meet the social relations of life. Modern movements in the schools looking toward this aim of education including industrial education, vocational guidance, medical inspection, playground movement, vacation schools and provisions for the care of special classes of pupils. Open to third year and more advanced students. Two hours attendance. Two hours credit. First semester. Williams

24. **Socialization of Religion**—A discussion of the nature and function of religion as an element of the social process, and a comparison of the leading religions as to social content. Demands upon the modern church and its adaptation of architecture and program of activities to meet such; institutional features of church work; social results of missions, especially in foreign lands. Open to third year and more advanced students. Two hours attendance. Two hours credit. Second semester. Williams

25. **The Family**—The history of matrimonial institutions with a study of some of the more important problems, connected with the family life. One to third year and more advanced students. Three hours attendance. Three hours credit. First semester. Howard

27. **Parliamentary Law and Practice**—Designed to give students training in the rules and practices of deliberative bodies. Open to juniors, seniors and those having taken courses 1 and 2. Three or four hours attendance. Two hours credit. First semester.

[29. **Government of Nebraska**—A study of the organization and administration of state and local government; political and constitutional development; the legislature and legislation; the judicial system and judicial administration; governor and administrative system; institutional administration; local, county and municipal government. Lectures, readings, reports. Open to second year and more advanced students. Three hours attendance. Three hours credit. First semester. Not given in 1918-1919. Aylsworth]

31. **State and Local Administration**—A study of administrative organization and activities of state and local government in the United States. Conducted by lectures and class discussion. Open to juniors, seniors and to students having taken courses 1 and 2 or their equivalent. Two hours attendance. Two hours credit. First semester Senning

32. **Problems in State Administrations**—Course 31 continued as a seminar. Open only to students having taken course 31 except by consent of instructor. Two hours attendance. Two hours credit. Second semester. Senning

33. **Theory and Practice of Legislation**—A study of the structure, organization, and methods of procedure of legislative bodies, and the drafting of legislative bills. Open only to juniors, seniors or those having taken courses 1 and 2 or their equivalent. Two hours attendance. Two hours credit. First semester. Aylsworth, Sheldon

34. **Practical Legislation; Nebraska Problems**—Drafting and criticism of legislative bills and information briefs in co-operation with Nebraska Legislative Reference Department. Practice work at state house during legislative session, January to April of odd numbered years. Two hours attendance. Two hours credit and additional hour of credit granted for special work. Credited in the College of Law. Sheldon

33a. **Seminar on Nebraska History, Politics and Economics**—Combined research seminar of the departments of American History and Political Science and Sociology. General subject for 1918-1919 will be the earlier periods of Nebraska; special assignments may be made upon any phase of Nebraska's development if desirable and convenient. Open to advanced undergraduates on consultation with instructors, and to graduates. Two hours attendance. Two hours credit. May be registered for in either of the two departments. First semester. Caldwell, Sheldon

34a. **Seminar on Nebraska History, Politics and Economics**—Course 33a continued. Second semester.

35. **Folklore**—An examination of those systems of belief and conduct, which, inherited from prehistoric and primitive culture, have survived into modern civilization. After preliminary lectures on the study and classification of folklore, the subject is discussed under the following heads: 1. Folk-faith: Animism; magic; myth. 2. Folk-literature: Folk-tales, their origin, diffusion and interpretation; fables; folk-songs, including ballads and children's rhymes; folk-epics, notably those of Celtic and Teutonic peoples; folk-plays, including mimes, mummers' plays and mystery plays; folk-sayings, including proverbs and riddles. 3. Folk-custom: Ceremonial forms and observances; rules of politeness and salutations; birth, puberty, marriage and death rites; popular festivals, especially the festivals of the Christian year; children's games; games of chance. 4. Folk-superstition: Folk-medicine; sacred numbers; symbols; lucky and unlucky days; animal lore and plant lore. These several topics are treated with special reference to the beginnings of religion, law and

morality. The course should prove of special importance to teachers and to others interested in the study of childhood. Lectures accompanied by a reference syllabus. Two hours attendance. Two hours credit. First semester. Webster

36. **Folklore**—Course 35 continued. Second semester.

[37. **Principles of Political Science**—The scope and methods of political science, the nature and origin of the state, forms of state and government, sovereignty, functions of the state, citizenship and nationality, modern principles of representation, suffrage and governmental organization. Open to seniors and graduates. Two hours attendance. Two hours credit. First semester. Not given in 1918-1919.
Aylsworth]

[38. **History of Political Theories**—The development of ancient medieval and modern political thought in its relation to political history; political theories of Aristotle, Aquinas, Machiavelli, Bodin, Grotius, Hooker, Hobbes, Locke, Montesquieu, Rousseau, Burke and others. Open to seniors and graduates. Two hours attendance. Two hours credit. Second semester. Not given in 1918-1919.
Aylsworth]

39. **Training Course for Social Service**—The aim of this course is to direct those desiring to enter some field of social service—both in their choice of work, if undecided, and in their preparation. In addition to instruction in methods of investigation and the use of statistical material, the laboratory method will be employed in so far as practicable; and when desired, various opportunities for social service will be provided students in their particular fields, under the direction of the instructor. Open to seniors and graduates. Two hours attendance. Two hours credit. First semester. Williams

[39a. **Field Work**—For the purpose of testing out the students aptitude for various lines of social work, opportunity for practice in the field will be given students who are beginning work in practical sociology. This course should be registered for only in connection with a lecture course 67, 21, 23, 22, 24 and only upon consent of the instructor. It will offer practice work in connection with organized charity, the juvenile court, night schools, vocational guidance, community centers, etc. Open to sophomores and above. Time to be arranged. One hour credit. First semester. Williams]

40. **Training Course for Social Service**—Course 39 continued. Second semester.

40a. **Field Work**—Course 39a continued. Second semester.

41. **American Consular Service**—Evolution of consular system; present day organization; qualification and duties of consuls; problems; relation to expansion of trade and commerce of the United

States. Conducted by lectures and class discussion. Open to advanced students. Two hours attendance. Two hours credit. First semester. Senning

43. **American Foreign Relations**—Organization of diplomatic service; treaty making power; a study of contemporary problems of United States as world power; participation of the United States in development of international law. Open to advanced students. Three hours attendance. Three hours credit. First semester. Senning

44. **International Politics**—A study of the international alliances, the rival world-policies, the territorial problems, the rights of lesser nationalities, the movements for responsible government, reduction of armaments and world organization for peace preceding the war and involved in terms of adjustment at its close. Open to juniors, seniors and those having credit for courses 1 and 2 or their equivalent in history. Three hours attendance. Three hours credit. Second semester. Aylsworth

45. **Constitutional Aspects of Social and Industrial Problems in United States**—Tests of constitutionality of legislation; legislation for protection from fraud and oppression of economics interests; labor legislation hours, wages, employers liability and workingmen's compensation; legislation affecting business of a public nature—nature of public calling, regulation of rates, equal service; conservation; city planning; eugenics. Open only to advanced students. Two hours attendance. Two hours credit. First semester. Senning

46. **National Administration**—Administrative powers of the President and Congress; principle of administrative organization; cabinet of the President, executive department; boards and commissions and administrative service of the national government, judicial administration and relation of courts of executive authority. Open to juniors, seniors and those having credit for courses 1 and 2 or their equivalent. Two hours attendance. Two hours credit. Second semester. Senning

47. **Seminar on American Politics and Government**—The subject of investigation will vary from year to year. Primarily for graduates, but by consent other specially qualified students may be admitted. One two-hour (evening) session each week. Two hours credit. First semester. Aylsworth

48. **Seminar on American Politics and Government**—Course 47 continued. Second semester.

49. **Seminar on the Family**—Mother-right, father-right, polygyny, polyandry, wife-capture, wife-purchase, theories as to genesis of matrimonial institutions; divorce, marriage, birth-rate, "race-suicide,"

legislation and sex-education in the reform movement; intellectual and industrial liberation of women; co-education; problems of marriage, the home and the family. Primarily for graduates. By consent a limited number of other specially qualified students may be admitted. One two-hour (evening) session each week. Two hours credit. First semester. Howard

53. **Research Course in Social Anthropology**—Students who desire to undertake special investigations in the field of social anthropology will be guided in the selection of subjects, the use of the appropriate literature, and the preparation of their researches in shape for publication. The University Library contains sets of all the important periodicals devoted to anthropology, as well as a good collection of works of travel and other source materials. This course is limited in numbers, and intending students, before registration, should first consult the instructor in charge. One hour a week for conference. One hour credit. First semester. Webster

54. **Research Course in Social Anthropology**—Course 53 continued. Second semester.

RHETORIC

Professor Frye *(Head of Department)*, Professor Fogg, Professor Gass, Assistant Professor McPhee, Instructor Wimberly

COURSES

7. **English Composition**—Advanced course. Theory of English composition. Studies in the organization of literary material. Daily and fortnightly themes. Two hours attendance. Three hours credit. First semester. Frye

8. **English Composition**—Course 7 continued. Critical studies in style and structure. Readings and reports to illustrate the principles of English prose literature. Daily and fortnightly themes. Two hours attendance. Three hours credit. Second semester. Frye

9. **Writers' Course**—Intended for advanced students who wish to improve their writing in connection with some particular subject of study or inquiry. No classes; themes, criticism and conferences. The student is expected to propose a subject, to prepare a theme, and to submit it to the instructor for criticism and advice with a view to revision and improvement. Two hours credit. First semester. Frye

10. **Writers' Course**—Course 9 continued. Second semester.

11. **The History of Rhetoric**—A reading course in the history of rhetorical theory. Two hours attendance. Two hours credit. First semester. Gass

13. **Argumentative Composition**—Practical application of the principles of argumentation-analysis, evidence, structure (brief-drawing) the rhetoric of argument. The course centers in convincingness of matter and precision and lucidity of statement. Lectures, briefs and arguments on questions of general or college interest or from the students' work in other departments. Two hours attendance. Three hours credit. First semester. Fogg and Assistants

14. **Argumentative Composition**—Course 13 continued. While continuing drill in conviction, this course supplements 13 by stressing persuasion—adaptation of material to specific conditions—and vigor and ease of statement. Ethics of discussion. Lectures, readings, briefs and arguments. A thesis, for which 13 is direct preparation, may be substituted for shorter arguments. Two hours attendance. Three hours credit. Fogg and Assistants

15. **Debate**—Principles of convincing and persuasive argumentative composition applied under the conditions of oral discussion. Lectures on rhetorical style for oral presentation; debates, preceded by briefs and criticised before the class, on economic, historical, political and sociological questions. Open to those who have completed course 13 and to others by consent of the instructor. Membership limited to twenty. Two consecutive hours attendance. Three hours credit. First semester. Fogg

16. **Debate**—Course 15 continued. Open to those who have completed courses 13 or 15 and to others by consent of the instructor. Second semester.

22. **Argumentation and Debate Seminary**—An intensive study in connection with the investigation of a question of current public interest, of analysis, testimonial evidence, the kinds of arguments and fallacies, brief-drawing, rebuttal, the rhetorical principles governing effective written and oral statement. Use of books of reference; the gathering and classifying of materials; round table discussion of members' reports. Admission by competitive appointment. Membership limited to sixteen. Two or three hours credit. First semester.

Fogg

29. **The Nineteenth Century Essay**—Principles of English composition as illustrated by selected works of masters of modern English prose—Jeffrey, Hazlitt, Macaulay, Lamb, DeQuincy, Carlyle, Ruskin, Arnold, Newman and Stevenson. Frequent themes; personal criticism. Prerequisite: Courses 1, 2. Two hours attendance. Two hours credit. First semester. Fogg

30. **The Ninteenth Century Essay**—Course 29 continued. Second semester.

34. **Comparative Criticism**—A comparative study of the drama—Greek, Spanish, French and English. Mainly a reading course, controlled by reports, critiques, and lectures. Intended to give the students some sort of foundation for the critical appreciation of literature. A reading knowledge of French is indispensable. Admission by consent of the instructor. Two hours attendance. Three hours credit.

Frye

ROMAN HISTORY AND LITERATURE

Professor Barber *(Head of Department)*, Associate Professor Sanford, Assistant Professor Hunter

MASTER OF ARTS

Candidates for advanced degrees must have completed courses 9, 10, 11, and 12 or their equivalents. Graduate study should include courses 17, 18, 19, 23 and 24, after which subjects may be selected from any courses open to graduates. The basis of requirement is as follows:

Second Minor: Three hours of classroom work for one year.

First Minor: Six hours of classroom work for one year.

Major: Six hours of classroom work and the equivalent of four hours in the preparation of a thesis.

Complete Course: Nine hours of classroom work and the equivalent of six hours in the preparation of a thesis.

Theses may be prepared on any of the following subjects: The satirists, the Roman drama, Roman history, Roman oratory, elegiac poetry, poetry of the empire, prose of the republic, prose of the empire, sermo, plebeius, patristic literature. By special arrangement a thesis may be prepared on some question of syntax covering the whole literature.

COURSES

17. **Suetonius**—Lives of Julius and Augustus Caesar. Sight reading. Talks upon Roman life. Papers by the class. Two hours attendance. Two hours credit. First semester. Barber

18. **Pliny and Juvenal**—Selected letters. Selected satires. Reading from hearing. Collateral readings on Roman social life. Two hours attendance. Two hours credit. Second semester. Barber

20. **Roman Law**—Reading of selections from the public and private law of the Romans. Lectures on the origin, development and principles of Roman law. Two hours attendance. Two hours credit. Second semester. Barber

21. **Cicero's Letters**—Selections arranged to throw light upon life and time of Cicero. Two hours attendance. Two hours credit. First semester. Sanford

22. **Cicero**—Tusculan Disputations. Book I is studied with reference to Roman ideas of immortality. Selections from Lucretius, Seneca and Buecheler's Carmina Latina Epigraphica. Two hours attendance. Two hours credit. Second semester. Sanford

23. **Composition**—A brief, illustrated review of the syntax of noun and verb, followed by practice in connected Latin writing. One hour attendance. One hour credit. First semester. Sanford

24. **Composition**—Course 23 continued. Second semester.

25. **Latin Grammar**—An elementary course in historical development of Latin moods. Tenses. Pronunciation. Lectures. One hour attendance. One hour credit. First semester. Barber

26. **Latin Grammar**—Course 25 continued. Second semester.

31. **Lucretius**—Books I and III, with an examination in modal uses of the remaining books. Two hours attendance. Two hours credit. First semester. Barber

32. **Cicero—de Oratore**—Book I, with an examination into modal uses in Cicero's essay. Two hours attendance. Two hours credit. Second semester. Barber

ROMANCE LANGUAGES AND LITERATURES

Professor Conklin *(Head of Department)*, Associate Professor Reese, Instructors Hanley, Thomes, Taylor, Gordon, Assistant Apperson

For graduate study in Romance language at least three years of French are necessary. For the courses in the following groups equivalents are accepted:

Philological Group—Second Minor: Old French, historical French grammar, Italian, or Spanish. First Minor: Requirements for second minor and further study of Old French and of Italian or Spanish. Major: Old French, historical French grammar, Italian and Spanish, advanced course in either Italian or Spanish, Romance phonetics.

Literary Group—Second Minor: Studies of different periods in French literature, Italian or Spanish and Old French. First Minor: Studies of different periods in French literature, Italian and Spanish, or advanced course in Italian or Spanish and Old French. Major: French writing and speaking; studies of different periods in French literature; Italian and Spanish, advanced course in either Italian or Spanish; Old French, historical French grammar, special readings.

COURSES

French

15. **Studies of Different Periods in French Literature**—Prerequisite: Courses 7, 8, 9, 10 or equivalent work. Two hours attendance. Two hours credit. First semester. Conklin, Reese

16. **Studies of Different Periods in French Literature**—Course 15 continued. Second semester.

17. **French Literature**—Courses 16 continued. First semester.

18. **French Literature**—Course 17 continued. Second semester.

Italian

41. **Beginning Italian**—Introductory course. Three hours attendance. Three hours credit. First semester. Conklin, Hanley

42. **Italian**—Course 41 continued. Second semester.

43. **Italian**—Second year course. Two hours attendance. Two hours credit. First semester. Conklin, Hanley

44. **Italian**—Course 43 continued. Second semester.

French

51. **Old French**—Grammar and reading. Two hours attendance. Two hours credit. First semester. Conklin

52. **Old French**—Course 51 continued. Second semester.

55. **French Philology**—Historical French grammar, phonetical analysis of French words. One hour attendance. One hour credit. First semester. Conklin

56. **French Philology**—Course 55 continued. Second semester.

Romance Phonetics

65. **Comparative Phonetics of Italian, Spanish, French and Provencal**—One hour attendance. One hour credit. First semester. Conklin

66. **Comparative Phonetics of Italian, Spanish, French and Provencal**—Course 65 continued. Second semester.

SANSKRIT AND COMPARATIVE PHILOLOGY

See ("Greek History and Literature.")

ZOOLOGY

Professor Wolcott *(Head of Department)*, Professor Barker, Professor Whitney, Associate Professor Latimer, Dr. Emerson

Before entering upon graduate work in zoology, and, before offering himself as a candidate, the student must consult with the head of the department as to the details of his course, even tho his work may actually be done under the immediate direction of another member of the staff.

Among the facilities available for research work are a large collection of mites, a comparatively unworked group of great economic and scientific importance; a considerable and rapidly growing collection of parasitological material; and an aquarium room with permanent colonies of protozoa and a number of the lower invertebrates under various environmental conditions, which permit of experimental work upon these forms.

The publications of the departmental staff and of graduate students are included in a series entitled "Studies from the Zoological Laboratory," of which five volumes of twenty numbers each have been completed, while of volume 6 numbers 101 to 118 have been published, and others are in press and in preparation.

The department has available a limited number of fellowships and scholarships which are given to deserving students each year. Applicants can secure full information in regard to them by addressing the head of the department.

MASTER OF ARTS

To register as a candidate for the degree of Master of Arts, a student must have completed two years of undergraduate work in zoology, and one in botany. The ordinary requirements are as follows:

Minor: An amount of advanced work equivalent to six credit hours, a minor thesis and seminar work for one semester.

Major: An amount of advanced work equivalent to 12 credit hours, a major thesis and assigned reading, including seminar work thruout the year.

Complete course: Work equivalent to full time for one year including reading and seminar work, and an acceptable thesis.

DOCTOR OF PHILOSOPHY

The preparation required of the student is the same as for the Master's degree. The requirements are:

Minor: An amount of work approximating that of the complete course for the degree of Master of Arts.

Major: A course of graduate study which shall meet at least the minimum time requirement imposed by the Graduate College; the preparation of a thesis which shall represent original research, and three years of seminar work.

COURSES

31. **Organic Evolution**—A general study of the development of the theory of organic evolution from the time of the ancient Greeks to the present day together with a study of the evidences that support the theory and also of the methods by which it has operated. It is desirable that a student should have had two years work in zoology before electing this course altho with the consent of the instructor it may be taken by those who have had only a year's work in zoology or botany. Lectures, assigned readings and essays. Two hours attendance. Two hours credit. First semester. Whitney.

32. **Genetics**—A general study of heredity and recent genetic theories, together with their practical bearing on the rearing and improvement of plants, animals and man. Breeding experiments with animals will be carried on by those who wish laboratory work. It is

desirable that a student should have had one year's work in zoology or botany before electing this course altho with the consent of the instructor it may be taken by those who have had no zoology or botany, but have sixty hours college credit. Lectures, assigned readings and essays. Two hours attendance. Two hours credit. Four hours laboratory gives an additional hour of credit. Second semester.

Whitney

33. **Advanced Work in Animal Morphology**—Devoted to the study of some assigned problem in morphology. Laboratory work with conferences and reading. May be elected as a five to ten-hour study. First or second semester. Elected only after consultation with instructor. Wolcott, Barker, Latimer

34. **Animal Parasites**—Taxonomy, morphology, biology and economic relationship of animal parasites. Lectures, laboratory and field work. The handling of a simple assigned problem usually on some undescribed species. Two hours attendance. Four to twelve hours laboratory. May be elected as a two- to five-hour course. First or second semester. Open to students who have had courses 3, 4 and 25 or their equivalent. Barker

35. **Experimental Zoology**—A general study of the recent results obtained in the field of experimental zoology together with demonstrations and experiments. Open to students who have had the second year's work in zoology. One hour attendance. Four hours laboratory. Two hours credit. First semester. Whitney

37. **Advanced Work on Local Fauna**—Advanced work in ecology and systematic zoology devoted to the study of some problem connected with the distribution within the state of a certain group of animals, or with the fauna of a certain habitat. The aquarium room offers facilities for keeping material thruout the winter. Field and laboratory work with conferences and assigned readings. May be elected as a three to ten-hour course. First or second semester. Wolcott

39. **Methods in Teaching Zoology**—A course for high school teachers, including a discussion of the methods of presenting the subject, of the choice of books, and of the collection and handling of laboratory materials. Two hours lecture and conference with other assigned work. Two hours credit. First semester. Wolcott

41. **Seminar**—A review of some recent book based on original research, with a study of the literature of the subject presented. Open to election by advanced students, and required of candidates for advanced degrees, of whom are required reports on assigned readings. One hour attendance. One hour credit. May be elected more than once. First or second semester. The Staff

43. **Research**—The equipment of the department and the library facilities are such that research along certain lines indicated below is being carried on. An extensive Salt Basin, including a salt lake over a mile in extent and alkali flats with numerous ponds, all within a few minutes' walk of the campus, offer noteworthy opportunities for certain types of investigation. This course can be elected only by those registered in the Graduate College.

a. Morphology of the mites. Ecological studies and investigation on the local fauna. Wolcott

c. Morphology of the parasitic protozoa and worms. Barker

d. Problems in heredity and sex-determination. Whitney

e. Morphology of the vertebrate nervous system. Latimer

GRADUATE STUDENTS IN 1917-1918

Candidates for the Degree of Doctor of Philosophy

Andersen, Emma Nathalia.....Lincoln
A. B. 1910, A. M. 1913, The University of Nebraska
Botany

Bradbury, Ora Clare.....Lincoln
B. Sc., 1914, Ottawa University; A. M. 1915, The University of Nebraska
Zoology, Botany

Burrage, Dwight Grafton.....Crete
A. B. 1897, A. M. 1899, Amherst College
Greek, Latin, Sanskrit

Clark, Letta May.....University Place
A. B. 1905, Nebraska Wesleyan University; A. M. 1913, The University of Nebraska
English Language and Literature

Crago, Alfred.....Lincoln
A. B. 1905, A. M. 1915, The University of Nebraska
Education, Philosophy, Political Science

Cromwell, Richard Oliver.....Lincoln
A. B. 1912, The University of Nebraska; M. S. 1916, North Carolina College of Agriculture
Plant Pathology and Physiology, Botany, Agricultural Chemistry

Fitzpatrick, Thomas J.....Bethany
B. Sc. 1893, A. M. 1895, Iowa State College
Botany

Fulk, Joseph Richard.....Lincoln
A. B. 1903, A. M. 1912, The University of Nebraska
Education, Philosophy, Sociology

Fulmer, Clark Adelbert.....Lincoln
Ph. B. 1898, Nebraska Wesleyan University; A. M. 1910, University of Nebraska
Education, Philosophy, Political Science

Hannah, Margaret Louise.....Tilden
A. B. 1907, A. M. 1913, The University of Nebraska
Botany

Howie, Ethel Lee.....York
A. B. 1906, A. M. 1914, The University of Nebraska
European History, English Literature

Hughes, Gwendolyn.....Lincoln
A. B. 1916, A. M. 1917, The University of Nebraska
Political Science and Sociology, Economics

Kiesselbach, Theodore Alexander.....Lincoln
A. B. 1906, B. Sc. 1908, A. M. 1912, The University of Nebraska
Botany

Klotsche, Ernest Heinrich.....Lincoln
Certificate 1899, Leipsig Gymnasium; A. M. 1916, The University of Nebraska
Greek, Sanskrit

Leffler, Millard Charles.....Lincoln
B. E. 1911, Peru State Normal; A. M. 1916, The University of Nebraska
Education, Philosophy, Political Science and Sociology

Long, Maurice Blaine.....College View
B. Sc. 1917, The University of Nebraska
Physics, Chemistry, Mathematics

Maitani, Hikojiro.....Lincoln
A. B. 1913, University of Denver; A. M. 1916, The University of Nebraska
Jurisprudence and Public Law, American History

Noll, William Clarence.....Toledo, Iowa
A. B. 1911, York College; A. M. 1915, The University of Nebraska
Zoology

Noyes, Bessie.....Lincoln
A. B. 1911, A. M. 1914, The University of Nebraska
Zoology

Parsons, Susanne Ring.....Lincoln
B. Sc. 1914, A. M. 1915, The University of Nebraska
Zoology, Chemistry

Reed, Albert Alison.....Lincoln
A. B. 1898, A. M. 1912, The University of Nebraska
Education, Philosophy

Reinsch, Frank Herman.....College View
A. B. 1909, A. M. 1912, The University of Nebraska
Germanics

Runge, Lulu Lillian.....Lincoln
A. B. 1905, A. M. 1909, The University of Wisconsin
Mathematics, Education

Shirk, Claude Joseph.....University Place
A. B. 1901, McPherson College; A. M. 1902, University of Chicago
Botany, Zoology

Sowell, James William.....Omaha
A. B. 1900, A. M. 1903, Gallaudet College
English Literature, Education, Philosophy

Ward, Nell Marguerite.....Lincoln
B. Sc. 1913, A. M. 1915, The University of Nebraska
Zoology

Wooster, Margaret.....Silver Creek
A. B. 1913, A. M. 1915, The University of Nebraska
Philosophy, Germanics, English Language and Literature

Candidates for the Degree of Master of Science

Cooper, John Ralph.....Lincoln
B. Sc. 1912, Kansas Agricultural College
Plant Pathology, Horticulture

Ingersoll, Arthur William.....Lincoln
B. Sc. 1917, The University of Nebraska
Agricultural Chemistry

Keim, Franklin David.....Lincoln
B. Sc. 1914, The University of Nebraska
Agronomy

Candidate for the Degree of Master of Science in Agricultural Engineering

Wirt, Frederick Alfred.....Manhattan, Kansas
B. Sc. in Civil Engineering 1913, The University of Nebraska
Agricultural Engineering

Candidates for the Degree of Master of Arts

Abbott, Roscoe Conklin.....Wood River
B. Sc. 1910, The University of Nebraska
Chemistry

Adams, Frank Flanders.....Lincoln
B. E. 1912, Peru State Normal
Education, Philosophy

Adson, Alfred Washington.....Rochester, Minn.
B. Sc. 1912, The University of Nebraska; M. D. 1914, University of Pennsylvania
Zoology

Anderson, Alberta Beck.....Lincoln
A. B. 1909, The University of Nebraska
Political Science and Sociology, Philosophy

Anderson, Andrew Emmett.....Lincoln
B. Sc. 1912, The University of Nebraska
Animal Husbandry

Anderson, Arthur.....Oxford
B. Sc. 1916, The University of Nebraska
Agronomy

Anderson, Mary Annette.....Lincoln
A. B. 1915, The University of Nebraska
English Language and Literature, Education

Anderson, Mildred Johanna.....Milford
A. B. 1914, The University of Nebraska
English Literature, Education

Anderson, Rose Gustava.....Gothenburg
A. B. 1917, The University of Nebraska
Philosophy, Education

Apperson, Catherine LaMaster.....Lincoln
A. B. 1915, The University of Nebraska
Romance Languages

Arenson, Saul Bryan.....Lincoln
Ph. C. 1916, B. Sc. 1917, The University of Nebraska
Chemistry

Ash, Irwin Oda.....Middlebourne, W. Va.
A. B. 1914, West Virginia University
Education

Aygarn, Edwin.....Choice, Minn.
A. B. 1908, The University of Minnesota
Political Science, American History

Bigelow, Clarence Ray.....Harrison
A. B. 1917, The University of Nebraska
American History

Bigglestone, Ruth Rieke.....Lincoln
A. B. 1914, Morningside College
English Language and Literature, Education

Bishop, Frank Edward.....University Place
A. B. 1916, Nebraska Wesleyan University
Agronomy

Bodwell, Edwin John.....Lincoln
B. Sc. 1888, Dartmouth College
Education

Bothwell, Jean Batham.....University Place
A. B. 1916, Nebraska Wesleyan University
European History

Bowers, Charles Arthur.....York
A. B. 1913, York College
Political Economy, Education

Boyd, Ralph Woodside.....Fremont
B. Sc. 1916, Coe College
Chemistry

Bradford, Harry Elwyn.....Lincoln
A B. 1904, The University of Nebraska
Education, Animal Husbandry

Brock, Anna Celestine.....Bethany
A. B. 1915, Cotner University
Education

Brower, Mary Letitia.....Fullerton
A. B. 1908, The University of Nebraska
European History

Brownell, Louise Barker.....Lincoln
A. B. 1916, The University of Nebraska
Botany

Burgess, Edith.....Bethany
A. B. 1913, Cotner University
Education, English Language and Literature

Burkart, Anna Driver.....Lincoln
A. B. 1917, The University of Nebraska
Philosophy, English Literature

Burnett, Jerome Benjamin.....Norman, Oklahoma
B. Sc. 1916, The University of Nebraska
Geology

Byers, Earl Alexander.....Atchison, Kansas
A. B. 1916, Midland College
Germanics

Carey, Nellie Mary.....University Place
A. B. 1915, Nebraska Wesleyan University
English Language and Literature, Education

Chung, Henry.....Kearney
A. B. 1917, The University of Nebraska
Political Science and Sociology, Philosophy

Claar, Charles Edward.....Petersburg
A. B. 1917, The University of Nebraska
Education, Philosophy

Clark, Grace Maria.....Lincoln
A. B. 1917, The University of Nebraska
Education, Political Science and Sociology

Craft, Magdelene.....Tecumseh
A. B. 1916, The University of Nebraska
Germanics

Culler, Charles Linden.....Lincoln
A. B. 1917, The University of Nebraska
Political Science and Sociology

Damsgard, Lincoln Clarence.....College View
A. B. 1913, Union College
Physics

Dayton, Mabel Alice.....Wayne
A. B 1904, The University of Nebraska
Education

DeLong, Alton Harrison.....Watertown, S. D.
B. Sc. 1914, The University of Nebraska
Education

Dilworth, Cora Williams.....Lincoln
A. B. 1916, The University of Nebraska
Romance Languages, Education

Donaldson, James Cook.....Lincoln
B. Sc. 1910, Drake University
Education, Philosophy

Dow, Donald Benedict.....Elwood
B. Sc. 1917, The University of Nebraska
Chemistry

Epperson, Beulah McCaw.....Lincoln
A B. 1915, The University of Nebraska
English Literature

Fate, John Edgar.....Lincoln
B. Sc. 1917, The University of Nebraska
Political Science

Faulhaber, Marie Helen.....Lincoln
A. B. 1915, Nebraska Wesleyan University
Education, Philosophy

Fenlon, George Louis.....Trinidad, Colorado
A. B. 1908, The University of Nebraska
American History

Ferguson, Ollie Wayman.....Lincoln
B. Sc. 1903, Ohio State University
Political Science

Fowler, Sadie Lenore.....Bellevue
A. B. 1903, The University of Nebraska
English Literature, Education

Frum, Mary Alice.....Shelby, Ind.
A. B. 1910, The University of Nebraska
American History, Education

Fulton, Arthur Joseph.....College View
B. Sc. 1898, Union College
Political Science, Education

Giles, George Herbert.....Wilsonville
A. B. 1917, The University of Nebraska
Botany

Gray, Viola.....Lincoln
A. B. 1902, The University of Nebraska
English Literature

Green, Lucy Garrison.....Lincoln
A. B. 1898, The University of Nebraska
American History, English Language and Literature, Political Science and Sociology

Gregory, Annadora Foss.....Crete
A. B. 1915, Doane College
American History, Education

Grewe, Emily Helen.....Chadron
A. B. 1917, The University of Nebraska
Chemistry

Haag, Grace Clarabelle.....Clay Center
A. B. 1915, The University of Nebraska
English Literature, Education

Hager, Walter Ellsworth.....Lincoln
B. Sc. 1916, The University of Nebraska
Physics

Harman, Susan Emolyn.....Peru
B. E. 1914, Peru State Normal; A. B. 1917, The University of Nebraska
English Literature

Heiser, Elizabeth Isabel.....White, S. D.
B. Sc. 1917, South Dakota College of Agriculture
American History

Herrmann, Carl Christian.....Lincoln
Ph. B. 1906, Iowa Wesleyan University
Political Science

Himes, Minnie Grinstead.....Spokane, Wash.
A. B. 1917, Cotner University
Sociology, English Literature

Hudson, Roy William.....Hayes Center
A. B. 1916, Nebraska Wesleyan University
Physics

Huwaldt, Edward.....Omaha
A. B. 1913, The University of Nebraska
Germanics

Jeffrey, Harry.....Bethany
A. B. 1918, Cotner University
English Literature, Romance Languages

Jenkins, Charlotte Louisa.....Lincoln
A. B. 1916, The University of Nebraska
Home Economics

Johnson, Eleanor Moliere.....Fort Smith, Arkansas
A. B. 1904, The University of Nebraska
American History

Johnson, Swen Oscar.....Wahoo
A. B. 1908, Augustana College
Chemistry

Johnson, Tressa Beatrice.....Lincoln
A. B. 1916, The University of Nebraska
Philosophy, English Literature

Kano, Hisanori.....Tokio, Japan
A. B. 1916, Tokio Imperial University
Farm Management, Agricultural Engineering, Animal Husbandry

Kuhn, Ada Ruth.....Lincoln
A. B. 1915, The University of Nebraska
Political Science and Sociology

Kunde, Margarete Meta Hedwig.....Lincoln
A. B. 1917, The University of Nebraska
Physiology

Lampert, Emma Margaret.....Lincoln
A. B. 1913, University of North Dakota
Chemistry, Education

Lanz, John Edward.....Plymouth
A. B. 1916, The University of Nebraska
Political Science, Education

Lee, Yong Kiu.....Ham-Heung, Korea
B. Sc. 1916, The University of Nebraska
Chemistry

Lefever, Rufus Harry.....Miller
A. B. 1917, Lebanon Valley College
Philosophy

Lively, Charles Elson.....Rushton
A. B. 1917, The University of Nebraska
Political Science and Sociology, Education

Lynch, James Eric.....Lincoln
A. B. 1917, The University of Nebraska
Zoology

McComb, Walter Jay.....College View
B. Sc. 1916, Union College
American History

McMahon, Clara Marguerite.....Lincoln
A. B. 1916, The University of Nebraska
English Literature

Mandalian, Jacob Garabet.....College View
A. B. 1916, Union College
European History, English Literature

Marrs, Ralph Merton.....Baird
A. B. 1917, The University of Nebraska
Sociology, Educational Theory and Practice

Mathewson, Louise.....Lincoln
A. B. 1915, The University of Nebraska
Philosophy

Mendenhall, Raymond Eli.....Oskaloosa, Iowa
A. B. 1912, Penn College; A. M. 1916, Des Moines College
Education

Mickel, Clarence Eugene.....Lincoln
B. Sc. 1917, The University of Nebraska
Entomology

Mogensen, Annie Martha.....Fullerton
B. Sc. 1917, The University of Nebraska
Botany

Munson, Eunice Constance.....Lincoln
A. B. 1917, The University of Nebraska
Political Science, Education

Neuman, Robert Reinhold.....College View
A. B. 1916, Union College
American Hisory

Nielsen, Caroline Signe.....Omaha
A. B. 1902, The University of Nebraska
Germanics, Latin, Education

Nordgren, August Edward.....Pender
A. B. 1914, The University of Nebraska
Chemistry

Oblander, Paul Victor.....Lincoln
A. B. 1917, Gymnasium, Newhausen, Switzerland
European History

Olsen, Ethel.....Sioux City, Ia.
A. B. 1915, Morningside College
English Literature, Education

Partridge, Edwin Maynard.....Omaha
B. Sc. 1916, The University of Nebraska
Chemistry

Phillips, Eva Fern.....Beatrice
A. B. 1911, Bellevue College
Education, American History

Poska, Rebecca Ruth.....Lincoln
A. B. 1911, The University of Nebraska
English Language and Literature, Education

Raub, Leo Gerard.....Lincoln
A. B. 1916, Oberlin College
Physics

Reynoldson, Addie.....St. Edward
A. B. 1904, The University of Nebraska
American History, Education

Rhoden, Beulah Richard Harold.....Lincoln
A. B. 1916, The University of Nebraska
Zoology

Robinson, James Millard.....Lincoln
B. Sc 1914, Wilberforce University
Mathematics

Roddy, Mary Elizabeth.....Nebraska City
A. B. 1904, The University of Nebraska
English Language and Literature, Education

Rough, Emily Violet.....Omaha
A. B. 1913, Nebraska Wesleyan University
English Literature, Economics

Rouse, Edwin Lincoln.....Peru
A. B. 1910, Cotner University
Education, Philosophy

Rummons, Constance.....Lincoln
A. B. 1916, The University of Nebraska
Philosophy, Education, English Language and Literature

Ryman, Eugene Miles.....University Place
M. D. 1910, Creighton University
Education, Psychology

Schriever, Fred.....Dakota City
A. B. 1914, Morningside College
Germanics

Scott, Birdie Grace.....Lincoln
A. B. 1906, The University of Nebraska
English Literature, Education

Severin, Richard Otto.....Adams
A. B 1911, The University of Nebraska
Education, Political Science

Shaffer, Elizabeth Mary.....David City
A. B. 1910, The University of Nebraska
English Literature, Education

Shanek, Bertha.....Odell
A. B. 1912, The University of Nebraska
Slavonic

Short, Mamie Frances.....Lincoln
B. Sc. 1903, The University of Nebraska
Philosophy, Education

Showalter, Donald Fox.....Buffalo, Mont.
A. B. 1916, The University of Nebraska
Philosophy, Education

Showalter, Ruth Stephenson.....Lincoln
A. B. 1917, The University of Nebraska
English Literature

Snocker, Frederick Amos.....University Place
A. B. 1917, The University of Nebraska
English Literature

Spracher, Macy Lucretia.....Cowles
A. B. 1912, Nebraska Wesleyan University
Botany

Staley, Alvah.....Superior
A. B. 1901, The University of Nebraska
Education

Stander, Rachel.....Louisville
A. B. 1915, Nebraska Wesleyan University
English History, Education

Stevens, Pearl Ray.....Bethany
A. B. 1917, Cotner University
Philosophy, Political Science

Stevenson, Pearl.....Auburn
A. B. 1904, The University of Nebraska
English Literature, Education

Stilwell, Charles Frizzell.....Clarks
B. Sc. 1901, Nebraska Wesleyan University
Education

Sturmer, Anna Marie.....Jansen
A. B. 1917, The University of Nebraska
English Language and Literature, Education

Swanson, Mabel Eleanor.....Holdrege
A. B. 1908, The University of Nebraska
Botany, Education

Taylor, Florence Leo.....College View
A. B. 1913, Union College
Romance Languages, English Language and Literature

Taylor, Olive Carrie.....Loveland, Colorado
A. B. 1913, Union College
English Literature

Theisen, Henry Herbert.....West Point
A. B. 1915, The University of Nebraska
Education

Therkelsen, Carrie Chmelka.....Lincoln
A. B. 1914, The University of Nebraska
American History

Thomas, Edlamay Colvin.....Bethany
B. Sc. 1912, Kearney State Normal
English Literature, Educational Theory and Practice

Thompson, Mildred Francis.....Columbus
A. B. 1917, The University of Nebraska
American History

Towne, Jessie Margaret.....Omaha
A. B. 1916, The University of Nebraska
Greek

Vines, Jacob Washington.....Lincoln
A. B. 1915, Ottawa University
American History, Education

Vosacek, Frank Richard.....Omaha
B. Sc. 1908, The University of Nebraska
Education, Philosophy

Vose, Leonard Owen.....Lincoln
B. Sc. 1917, The University of Nebraska
Agricultural Chemistry, Bacteriology

Voss, Adolph Max.....Lincoln
A. B. 1902, The University of Nebraska
Education, Latin, German

Waite, Dorothy Olivia.....Lincoln
A. B. 1915, The University of Nebraska
European History

Ward, Ida Amine.....Litchfield
A. B. 1914, The University of Nebraska
English Literature, Education

Waters, Winifred Belle.....Lincoln
A. B. 1910, The University of Nebraska
Latin

Weber, Chris Oliver.....Friend
A. B. 1916, The University of Nebraska
Philosophy, Education

Webster, Richard Orin.....Lincoln
B. Sc. 1910, The University of Nebraska
Bacteriology, Chemistry

Wehrs, Cecelia Sophie.....Milford
A. B. 1916, The University of Nebraska
German

Westhoff, James.....Malvern, Iowa
A. B. 1916, Nebraska Wesleyan University
English History, Education

Williamson, Bessie Belle.....Galesburg, Ill.
A. B. 1909, Lombard College
Philosophy

Wilson, Ira Glade.....Peru
B. E. 1915, Peru State Normal
English Language and Literature

Winstrom, John Harry.....Farragut, Iowa
A. B. 1916, The University of Nebraska
English Literature, Education

Wupper, Mary Magdalene.....Lincoln
A. B. 1917, The University of Nebraska
European History

Graduate Students Without Reference to Degree

Abel, Hazel Hempel.....Lincoln
A. B. 1908, The University of Nebraska

Ahrens, Ida Virginia.....Sac City, Ia.
B. Sc. 1916, Iowa State College

Alexis, Marjorie Odman.....Lincoln
A. B. 1917, The University of Nebraska

Baker, Amy Leota.....Geneva
A. B. 1917, The University of Nebraska

Beattie, Ethel Blanche.....Lincoln
A. B. 1898, A. M. 1914, The University of Nebraska

Bee, Lois Grace.....Fairbury
A. B. 1917, The University of Nebraska

Bentley, Rufus Clarence.....Lincoln
A. B. 1894, A. M. 1895, The University of Nebraska; Ph. D. 1917, University of Illinois

Berger, Dan Henry.....York
A. B. 1917, York College

Boomer, Alice.....Fairview, Kansas
B. L. 1888, Ottawa University; Ph. B. 1898, Chicago University

Brandt, Otto E.....Beatrice
A. B. 1915, Doane College

Brokaw, Eva June.....Bethany
A. B. 1914, The University of Nebraska

Brown, Sadie Reye.....Minden
A. B. 1915, The University of Nebraska

Bullock, Edna Dean.....Lincoln
B. L. 1889, The University of Nebraska

Bunting, Herbert Robins.....Lincoln
A. B. 1914, B. Sc. 1916, The University of Nebraska

Burkart, Jacob.....Lincoln
Theological Diploma 1895, St. Louis Theological Seminary

Canfield, Sarah Wright.....Tecumseh
A. B. 1916, The University of Nebraska

Cass, Nell McIntosh.....Lincoln
A. B. 1911, The University of Nebraska

Chaikin, Annis.....Lincoln
A. B. 1908, A. M. 1910, The University of Nebraska

Clark, Ellen Elizabeth.....Lincoln
A. B. 1906, The University of Nebraska

Clark, Rose Bertha.....Peru
A. B. 1904, The University of Nebraska

Clark, Walter Cornelius.....Bethany
A. B. 1917, Cotner University

Cone, Edith May.....Lincoln
B. Sc. 1915, The University of Nebraska

Dale, Ellis Irene.....Bethany
A. B. 1916, Cotner University

Davis, Guy Russell.....York
A. B. 1912, A. M. 1914, The University of Nebraska

Davis, Minnie Ada.....Denton
A. B. 1912, Nebraska Wesleyan University

Dixon, Ruth Mabel.....Bethany
A. B. 1916, Cotner University

Dodds, Theodora.....Beatrice
A. B. 1916, The University of Nebraska

Doyle, Elizabeth Ann.....Lincoln
A. B. 1917, The University of Nebraska

Duncombe, Frances-Evaline.....Lincoln
A. B. 1897, The University of Nebraska

Duras, Josephine Lucia.....Lincoln
A. B. 1904, The University of Nebraska

Eggleston, Olive Beatrice.....Elgin
A. B. 1917, The University of Nebraska

Embree, Arthur Lee.....University Place
A. B. 1915, Nebraska Wesleyan University

Ewing, Halle Laura.....Lincoln
M. D. 1899, University of Michigan; A. B. 1911, A. M. 1912, The University of Nebraska

Field, Edith Caroline.....Lincoln
A. B. 1906, A. M. 1916, The University of Nebraska

Findley, William Copley.....Bellevue
A. B. 1914, Bellevue College

Fosbury, Eva May.....University Place
A. B. 1905, Nebraska Wesleyan University

Frandsen, Mattie Madson.....Lincoln
B. Sc. 1906, Iowa State College

Fuchs, Gustave Otto.....Stanton
A. B. 1912, The University of Nebraska

Green, Dorothy.....Lincoln
A. B. 1907, The University of Nebraska

Green, Katherine Mills.....Lincoln
A. B. 1906, The University of Nebraska

Grewe, Frances.....Menzel
A. B. 1917, The University of Nebraska

Hagelin, Paul Albert.....Wahoo
A. B. 1916, The University of Nebraska

Hastings, Laura Elizabeth.....Lincoln
A. B. 1906, The University of Nebraska

Hayden, Mary Alice.....University Place
A. B. 1915, Nebraska Wesleyan University

Hellner, Anna Marie.....Lincoln
A. B. 1914, University of Colorado

Hewit, Emma Edna.....Lincoln
A. B. 1910, The University of Nebraska

Hewitt, Lucy Rockwood.....Lincoln
A. B. 1909, The University of Nebraska

Higgins, Edith Charity.....Beatrice
A. B. 1915, The University of Nebraska

Hills, Ruby.....Sidney, Iowa
A. B. 1915, The University of Nebraska

Himes, Minnie Grimstead.....Spokane, Wash.
A. B. 1917, Cotner University

Huebner, Julius.....Emerald
Theological Certificate 1910, Breklum, Schleswig

Hunter, Annamae.....Lincoln
A. B. 1915, University of Denver

Huston, Harry Edwin.....Lincoln
B. Sc. 1917, The University of Nebraska

Hyatt, Grace Thompson.....Lincoln
A. B. 1897, The University of Nebraska

Iddings, Florence Elizabeth.....North Platte
A. B. 1917, Bryn Mawr

Johnson, Frank F.....Lincoln
B. Ph. 1896, Fairfield College

Kellenbarger, Adele Mussette.....Merna
A. B. 1916, The University of Nebraska

Kellogg, Jessie May.....Red Cloud
A. B. 1906, University of Washington

Knotter, Gerardine.....Stapleton
A. B. 1915, Drury College

Kuns, David Raymond.....Humboldt
A. B. 1912, York College

Ladd, Sarah Avery.....Lincoln
A. B. 1917, Wellesley College

Linch, Leta Blanche.....Lincoln
A. B. 1912, The University of Nebraska

Lord, Gladys Malone.....Lincoln
A. B. 1916, The University of Nebraska

McIntosh, Grace.....Lincoln
A. B. 1915, The University of Nebraska

Machetzki, Paul Otto.....Ponca
A. B. 1915, Midland College

Mapes, Charles Boyd.....Lincoln
B. E. 1917, Peru State Normal

Matzner, Johann Gust Adolf.....Lincoln
Theological Diploma 1902, Eden Theological Seminary

Miller, Edith Margaret.....Gibbon
A. B. 1915, The University of Nebraska

Miller, Glen Eugene.....Ravenna
A. B. 1916, The University of Nebraska

Miller, Louise.....Lincoln
A. B. 1903, A. M. 1905, The University of Nebraska

Muir, Sarah Theodosia.....Lincoln
A. B. 1900, A. M. 1906, The University of Nebraska

Myers, Eda Bernice.....Lincoln
A. B. 1907, The University of Nebraska

Nelson, Clara Jeanette.....Lincoln
A. B. 1914, A. M. 1916, The University of Nebraska

Newbecker, Bernice Mitchell.....Ord
B. Sc. 1916, Hastings College

Oberlender, Vita Estelle.....Normal
B. Sc. 1909, The University of Nebraska

O'Brien, Ruth.....Lincoln
B. Sc. 1914, A. M. 1915, The University of Nebraska

O'Neill, Mabel Manwaring.....Lincoln
A. B. 1914, Grinnell College

Patterson, Sarah Etta.....Lincoln
A. B. 1908, University of Missouri

Patton, Mildred Merle.....Fremont
A. B. 1913, The University of Nebraska

Pegler, Ethel Artha.....Lincoln
A. B. 1914, The University of Nebraska

Perez-Guerra Consuelo.....Bethany
A. B. 1917, Cotner University

Pettis, Marian Hebard.....Lincoln
A. B. 1914, The University of Nebraska

Pool, Vera.....Lincoln
A. B. 1916, The University of Nebraska

Prokop, Rudolf Victor.....Wilber
A. B. 1916, The University of Nebraska

Read, Florence Alva.....Merna
A. B. 1916, The University of Nebraska

Ring, Penelope Patch.....Lincoln
A. B. 1911, The University of Nebraska

Rizk, Joseph J.....Waverly
A. B. 1904, Girard Institute; M. D. 1914, Cotner University

Roane, Ida Lucile.....Lincoln
A. B. 1916, The University of Nebraska

Rokarr, Elsie Katherine.....Lincoln
A. B. 1910, The University of Nebraska

Rowell, Eugene Clark.....College View
A. B. 1914, Union College; A. M. 1916, The University of Nebraska
Savage, Lottie Luella.....Lincoln
A. B. 1914, The University of Nebraska
Schulte, Regina Bernardine.....Lincoln
A. B. 1911, The University of Nebraska
Scott, Aurelia Marion.....Lincoln
B. Sc. 1913, The University of Nebraska
Scott, Robert Douglas.....Lincoln
B. Sc. 1904, Kansas State Agricultural College; A. M. 1910, The University of Nebraska
Shagool, John Walter.....Bethany
A. B. 1914, Cotner University
Smith, Edwin Erwin.....Bethany
A. B. 1907, Cotner University
Smith, Lulu Harding.....Bethany
A. B. 1906, Cotner University
Snell, Hazel Frost.....Lincoln
A. B. 1912, A. M. 1917, The University of Nebraska
Staton, Ida Estella.....Lincoln
A. B. 1915, University of Kansas
Stewart, Owen Pressley.....Lincoln
B. Sc. 1902, Nebraska Wesleyan University
Stufft, Clella.....Fairfield
A. B. 1916, The University of Nebraska
Sullivan, Alma Leona.....Broken Bow
A. B. 1912, The University of Nebraska
Taylor, Albion Guilford.....College View
A. B. 1915, Highland Park College
Taylor, Sara Vore.....Omaha
A. B. 1896, The University of Nebraska
Taylor, Sarah Elizabeth.....Lincoln
A. B. 1898, The University of Nebraska
Thurston, Henry Winfred.....Lincoln
B. Sc. 1915, University of Illinois
Vail, Nellie Antoinette.....Lincoln
A. B. 1909, The University of Nebraska
Van Buskirk, Besse A.....Merna
A. B. 1911, Cotner University
Walker, Florence.....University Place
A. B. 1911, Nebraska Wesleyan University
Wallace, Dorothy E.....Lincoln
A. B. 1917, The University of Nebraska
Warner, Fern Lymania.....Lewellen
B. Sc. 1917, Hastings College
Wiese, Helen Dinsmore.....Lincoln
A. B. 1913, The University of Nebraska
Wild, Idyl Gladys.....Wilber
A. B. 1916, The University of Nebraska
Wilder, Clem.....Cortland
A. B. 1915, University of Indiana
Wood, Eva Viola.....Gibbon
A. B. 1917, Grand Island College
Wood, Wilma Melvina.....Lincoln
A. B. 1908, The University of Nebraska
Wright, Mary Elizabeth.....University Place
A. B. 1914, Nebraska Wesleyan University

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1920/21

Series XXV. No. 9

Bulletin of The University of Nebraska

ANNUAL CATALOG

OF THE

GRADUATE COLLEGE

ANNOUNCEMENT

1920-21

Published by the University April 24, 1920

LINCOLN, NEBRASKA

The Bulletin of the University of Nebraska is published monthly in February; semi-monthly in March and December, semi-weekly in April, tri-monthly in August, and monthly in May and November of each year by the University of Nebraska. Entered at the Post-Office at Lincoln, Nebraska, as second-class matter under Act of Congress July 16, 1894.

Acceptance for mailing at special rate postage provided for in Section 1103, Act of October 3, 1917, authorized July 18, 1918.

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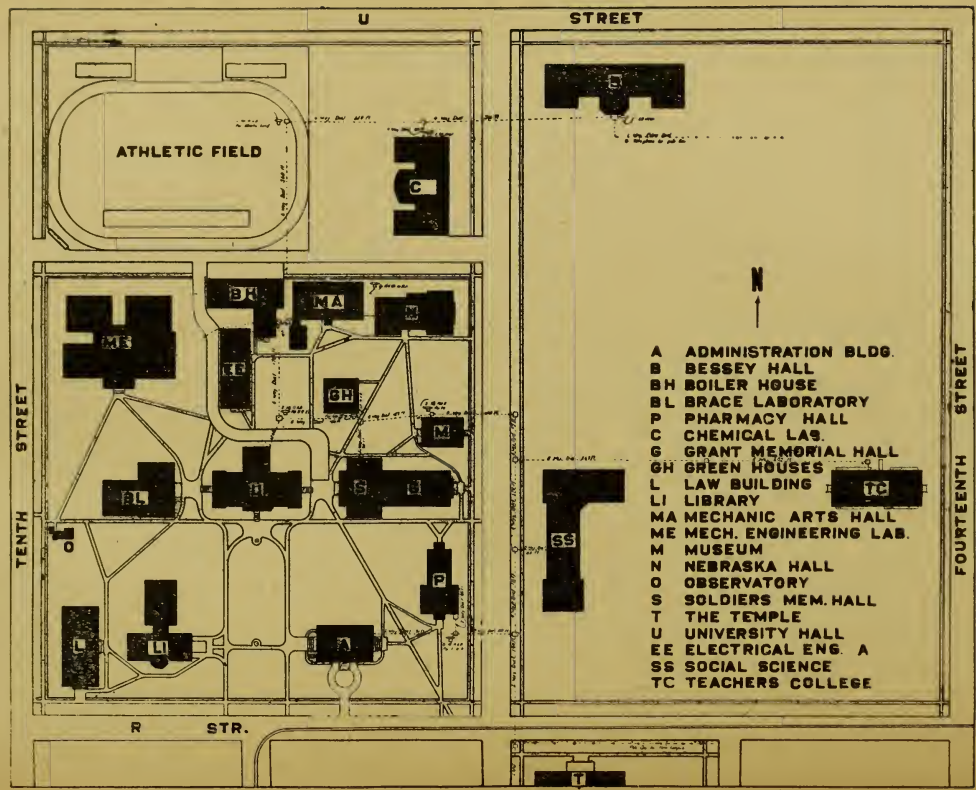
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A ADMINISTRATION BLDG.
B BESSEY HALL
BH BOILER HOUSE
BL BRACE LABORATORY
P PHARMACY HALL
C CHEMICAL LAB.
G GRANT MEMORIAL HALL
GH GREEN HOUSES
L LAW BUILDING
LI LIBRARY
MA MECHANIC ARTS HALL
ME MECH. ENGINEERING LAB.
M MUSEUM
N NEBRASKA HALL
O OBSERVATORY
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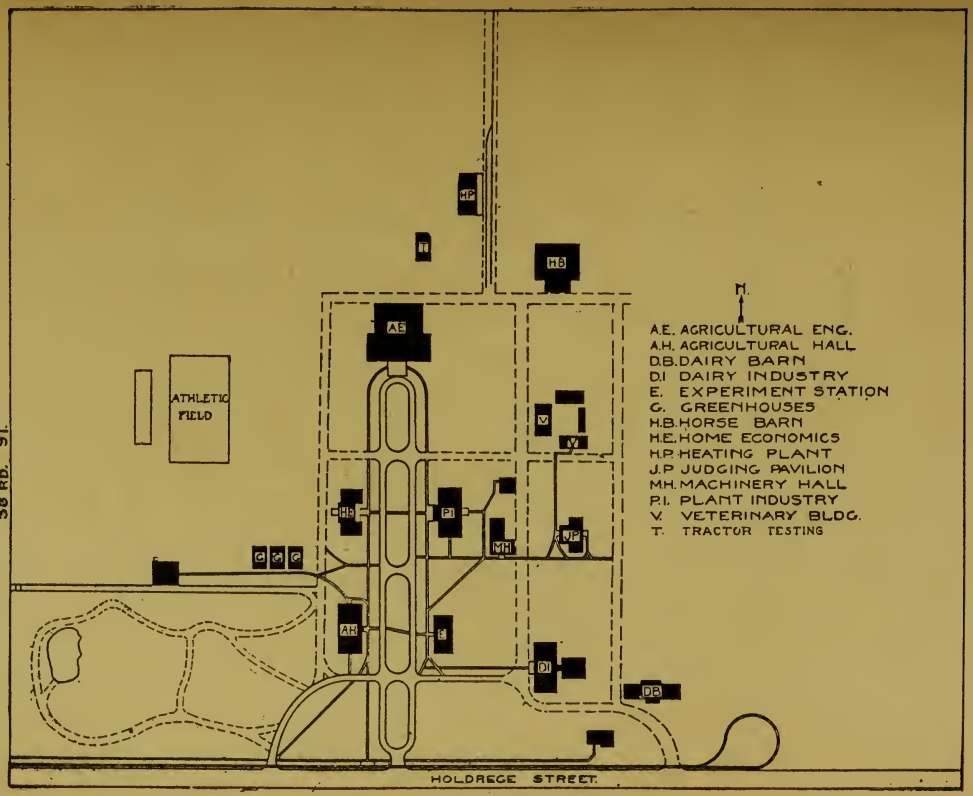
U UNIVERSITY HALL
EE ELECTRICAL ENG. A
SS SOCIAL SCIENCE
TC TEACHERS COLLEGE

CITY CAMPUS



UNIVERSITY FARM CAMPUS

THE UNIVERSITY

Colleges and Schools of the University. The University of Nebraska comprises the following colleges and schools:

The Graduate College.
The College of Arts and Sciences, including the School of Fine Arts.
The College of Agriculture.
The College of Engineering.
The College of Law.
The Teachers College.
The College of Medicine.
The College of Pharmacy.
The College of Business Administration.
The College of Dentistry.

The Teachers College High School, the School of Agriculture, the Nebraska School of Agriculture at Curtis, the Nebraska Agricultural Experiment Station, the Experimental Substations at North Platte, Valentine, and Scottsbluff, the Irrigation School at Scottsbluff, and the Agricultural Extension Service are also under the supervision of the Board of Regents of the University.

For separate catalogs or information regarding any of the above colleges or schools, address

THE REGISTRAR.
The University of Nebraska,
Lincoln, Nebraska.

CALENDAR FOR 1920-1921 OF ALL COLLEGES AND SCHOOLS

1920		
September 13-18	Monday-Saturday	Entrance examinations
September 15-18	Wednesday-Saturday	Registration, first semester
September 18	Saturday, 8 p. m.	University reception to all students
September 20	Monday	First semester classes meet
September 21	Tuesday, 11 a. m.	Opening address by the Chancellor
October 8	Friday	School of Agriculture, first semester begins
November 24	Wednesday, 12 m.	Thanksgiving recess begins
November 27	Saturday, 12 m.	Thanksgiving recess ends
December 7	Tuesday	Meeting of the Board of Regents
December 22	Wednesday, 6 p. m.	Christmas recess begins
1921		
January 5	Wednesday 8 a. m.	Christmas recess ends
January 6	Thursday	Meeting of the Board of Regents
January 17	Monday	School of Agriculture, second semester begins
January 22-29	Saturday-Saturday	First semester examinations
January 24-29	Monday-Saturday	Entrance examinations
January 26-29	Wednesday-Saturday	Registration, second semester
January 31	Monday	Second semester classes begin
February 14	Monday	Annual address before the Phi Beta Kappa and Sigma Xi societies
February 15	Tuesday	Meeting of the Board of Regents
March 26	Saturday, 12 m.	Spring recess begins
April 2	Saturday, 12 m.	Spring recess ends
April 12	Tuesday	Meeting of the Board of Regents
April 15	Friday	School of Agriculture Commencement
May 28-June 4	Saturday-Saturday	Second semester examinations
June 2	Thursday	Teachers College High School Commencement
Commencement Week		
June 4	Saturday	Final recommendations for degrees Annual meeting of the Board of Regents
June 4	Saturday	Class Day. Alumni Day
June 5	Sunday	Baccalaureate Sermon
June 6	Monday	Fiftieth Annual Commencement
Summer Session 1921		
June 4	Saturday	Registration, Summer Session
June 6	Monday	Summer Session begins
1921-1922		
September 14	Wednesday	First semester begins

THE BOARD OF REGENTS

Members 1920	Term Expires
HON. JOHN ESCHLEMAN MILLER, President, Lincoln	1921
HON. EDWARD PROVOST BROWN, Davey	1921
HON. PHILIP LOUIS HALL, Lincoln	1923
HON. HARRY DeWITT LANDIS, Seward	1923
HON. FRANK WOODHULL JUDSON, Omaha	1925
HON. JOHN ROBINSON WEBSTER, Omaha	1925

James Stuart Dales, Secretary.

COMMITTEES OF THE BOARD OF REGENTS

Executive—Messrs. Miller, Brown, Judson.
Finance—Messrs Hall, Webster, Landis.
Property—Messrs. Webster, Miller, Hall.
Industrial Education—Messrs. Landis, Judson, Brown.
Medical Education—Messrs. Judson, Hall, Landis.
Organization—Messrs. Miller, Brown, Webster.

OFFICERS OF ADMINISTRATION AND INSTRUCTION

The University

Samuel Avery, Ph.D., LL.D., Chancellor of the University.

James Thomas Lees, Ph.D., Provost of the University.

Florence Irwin McGahey, A.B., Registrar and University Publisher. *(Secretary of the Faculties.)*

The College

Lucius Adelno Sherman, Dean

Hartley Burr Alexander, Ph.D., Professor of Philosophy. *(Chairman of Department.)*

John Edwin Almy, Ph.D., Professor of Experimental Physics. *(Chairman of Department.)*

Leon Emmons Aylsworth, A.M., Professor of Political Science and Sociology.

Grove Ettinger Barber, A.M., Professor of Roman History and Literature.

[1]**Erwin Hinckley Barbour**, Ph.D., Professor of Geology. *(Chairman of Department of Geology and Geography.)*

Franklin Davis Barker, Ph.D., Professor of Medical Zoology and Parasitology.

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[1]Director of State Geological Survey.

William Charles Brenke, Ph.D., Professor of Mathematics.

Lawrence Bruner, B.Sc., Professor of Entomology.

Philo Melvin Buck, Jr., A.M., Dean of the College of Arts and Sciences and Professor of English.

William Wesley Burr, B.Sc., Professor of Agronomy. *(Chairman of Department.)*

Howard Walter Caldwell, A.M., Professor of American History.

Albert Luther Candy, Ph.D., Professor of Mathematics. *(Chairman of Department.)*

[1]**Leon Wilson Chase**, M.E., A.E., Professor of Agricultural Engineering. *(Chairman of Departments of Agricultural and Mechanical Engineering.)*

George Richard Chatburn, A.M., C.E., Professor of Applied Mechanics and Machine Design. *(Chairman of Department.)*

George Everet Condra, Ph. D., Director of State Conservation and University Surveys.

Clara Conklin, A.M., Professor of Modern Languages. *(Chairman of Department.)*

William Francis Dann, A.M., Professor of Art History and Criticism. *(Chairman of Department.)*

Lida B. Earhart, Ph.D., Professor of Elementary Education.

Carl Christian Engberg, Ph.D,. Executive Dean and Professor of Applied Mathematics.

[1]**Minnie Throop England**, Ph.D., Assistant Professor of Economics and Commerce.

Olin Jerome Ferguson, M.E.E., Dean of the College of Engineering and Professor of Electrical Engineering. *(Chairman of Department.)*

Horace Clyde Filley, A.M., Professor of Rural Economics. *(Chairman of Department.)*

Fred Morrow Fling, Ph.D., Professor of European History.

Miller Moore Fogg, A.M., Professor of English.

Charles Fordyce, Ph.D., Dean of the Teachers College and Professor of Supervision and Criticism of Instruction. *(Chairman of Department.)*

Laurence Fossler, A.M., Professor of Modern Languages.

Julius Herman Frandsen, M.S.A., Professor of Dairy Husbandry. *(Chairman of Department.)*

Prosser Hall Frye, A.B., Professor of English.

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[1]Resigned.

Paul Henry Grummann, A.M., Director of the School of Fine Arts and Professor of Dramatic Literature.

August Ernest Guenther, Ph.D., Professor of Physiology. *(Chairman of Department.) (In the College of Medicine.)*

William Granger Hastings, A.B., Professor of Law. *(Chairman of Department of Jurisprudence and Public Law.)*

Edgar Lenderson Hinman, Ph.D., Professor of Logic and Metaphysics.

Vernon Leo Hollister, E.E., Associate Professor of Electrical Engineering.

George Elliott Howard, Ph.D., Professor of Political Science and Sociology.

Robert Francis Howard, A.M., Professor of Horticulture. *(Chairman of Department.)*

Guernsey Jones, Ph.D., Professor of History. *(Chairman of Department.)*

Theodore Alexander Kiesselbach, Ph.D., Professor of Agronomy.

James Thomas Lees, Ph.D., Professor of Greek History and Literature. *(Chairman of Department of Ancient Languages.)*

James Edward LeRossignol, Ph.D., LL.D., Dean of the College of Business Administration and Professor of Economics and Commerce. *(Chairman of Department.)*

George Andrew Loveland, A.M., LL.B., Professor of Meteorology.

Rufus Ashley Lyman, A.M., M.D., Dean of the College of Pharmacy and Professor of Physiology and Pharmacology. *(Chairman of Department.)*

Edwin Maxey, D.C.L., Ph.M., Professor of Public Law and Diplomacy.

Clark Edwin Mickey, B.Sc. in M.E., B.Sc. in C.E., Professor of Civil Engineering. *(Chairman of Department.)*

Burton Evans Moore, Ph.D., Professor of Physics.

Raymond John Pool, Ph.D., Professor of Botany. *(Chairman of Department.)*

Louise Pound, Ph.D., Professor of English Language.

Elizabeth Irene Reese, A.M., Associate Professor of Romance Languages and Literatures.

Frederick Warren Sanford, A.B., Associate Professor of Roman History and Literature.

William Elmer Sealock, Ph.D., Professor of History and Principles of Education. *(Chairman of Department.)*

Sherlock Bronson Gass, Ph.B., Professor of English.

Lucius Adelno Sherman, Ph.D., LL.D., Dean of the Graduate College and Professor of English Language and Literature. *(Chairman of Department of English.)*

Philip Kuhns Slaymaker, M.E., Professor of Machine Design.

[2]**Oscar Van Pelt Stout**, C.E., Dean of the College of Engineering and Professor of Civil Engineering. *(Chairman of Department.)*

Frederick Ames Stuff, A.M., Litt.D., Professor of Technique of Instruction in English.

Myron Harmon Swenk, A.M., Professor of Economic Entomology and State Entomologist. *(Chairman of Department.)*

Goodwin DeLoss Swezey, A.M., B.D., Professor of Astronomy. *(Chairman of Department.)*

William George Langworthy Taylor, A.B., LL.D., Professor Emeritus of Economics and Commerce.

Fred Wilbert Upson, Ph.D., Professor of Chemistry and Chief Chemist of the Experiment Station. *(Chairman of Department.)*

George Olien Virtue, Ph.D., Professor of Economics and Public Finance.

Herbert Harold Waite, A.M., M.D., Professor of Bacteriology and Pathology. *(Chairman of Department.)*

Elda Rema Walker, Ph.D., Associate Professor of Botany.

[1]**Charles William Wallace**, Ph.D., Professor of English Dramatic Literature.

John Ernst Weaver, Ph.D., Professor of Ecology.

Hutton Webster, Ph.D., Professor of Social Anthropology.

David Day Whitney, Ph.D., Professor of Zoology.

[2]**Edwin Mead Wilcox**, Ph.D., Professor of Plant Pathology and Physiology and Plant Pathologist of the Experiment Station.

William Albert Willard, Ph.D., Professor of Anatomy. *(In the College of Medicine.)*

Robert Henry Wolcott, A.M., M.D., Professor of Zoology. *(Chairman of Department.)*

The Graduate Council

Professors Alexander, Barber, Barker, Brenke, Ferguson, Fossler, Upson, Williams.

Committee on Requirements for the Graduate Teachers Diploma: Professors Fordyce, Hyde, Reed, Sealock, Stuff.

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[1]Absent on leave.

[2]Resigned

THE GRADUATE COLLEGE

(Confers the degrees of Doctor of Philosophy, Master of Arts, Master of Science, Master of Agricultural, Civil, Electrical, and Mechanical Engineering.)

History of the Graduate College—Graduate instruction in the University of Nebraska was organized in 1886. In 1895 a Graduate School was organized, under a Dean and a designated faculty. In 1909, the charter of the University was amended, and the establishment of seven colleges, instead of the five colleges named in the charter, was authorized. By this act the Graduate School became the Graduate College of the University of Nebraska.

Purpose of the Graduate College—The Graduate College extends and enlarges the work of the undergraduate departments and provides facilities for specialization and research. It furnishes adequate preparation for those who expect to become investigators, professional engineers, or teachers in academies and colleges. The Graduate College offers opportunities, which would be costly in an institution differently endowed, at a minimum expense to the student.

Admission to the Graduate College

The Graduate College recognizes two classes of applicants: (1) those who are eligible to candidacy for higher degrees and wish to enter at once upon their special work; (2) those who, having taken a bachelor's degree, wish to broaden their education, without reference to higher degrees. Candidates seeking advanced degrees, with insufficient preparation, are admitted to graduate standing but are required to make up their deficiencies by taking courses in the undergraduate colleges.

Graduates of the colleges of this University, or of other institutions having equivalent courses, and who have been accepted and approved by the chairmen of the departments in charge of the subjects desired are registered by the Dean of the college for the degree they wish to secure. For the degree of Doctor of Philosophy, the candidate must take a major subject and an approved minor, or a major subject and two approved minors. Candidates for the degree of Master of Arts register for a major subject, or a major and a minor, or a major and two minors.

Fees

The usual laboratory fees are required of students taking work in any science or engineering department. But a student who is unable to devote his entire time to University graduate work, may, on recommendation of the Graduate Council, be permitted to register free of

charge after he has paid the Incidental fee for four semesters, if a candidate for the degree of Master of Arts; or for eight semesters, if a candidate for the degree of Doctor of Philosophy.

Medical Advice and Service

The University maintains a department of medical advice and any student needing this should report at once to the physician in charge. The medical dispensary is located in the building of the College of Pharmacy. Medical advice and dispensary service are free to all students of the University; drugs and medical supplies are furnished at cost. Inasmuch as this service is maintained without profit, but solely for the benefit of the students, the University cannot be held responsible for unforeseen or unexpected results. The chief function of the physician in charge is to act in a general advisory capacity, to look after minor injuries requiring immediate treatment, and to detect incipient ailments which may be a menace to the student's own health or to the health of others.

REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

The degree of Doctor of Philosophy cannot be secured in less than three years of graduate study. Two years of such work in another institution of equal rank may be credited by the Graduate Council; but the last two semesters of the candidate's work must be carried in residence under the direct supervision of this Graduate College. Before admission to full candidacy for the degree of Ph.D., each candidate must satisfy the department of Modern Languages that he has an adequate reading knowledge of French and German.

Thesis—On completion of his studies, the candidate must present an acceptable thesis which gives evidence of scholarly research. It must be submitted, typewritten, and bound according to a prescribed form, two months before the intended graduation of the candidate. When approved, it will be placed in the Chancellor's office, where it may be examined by members of the faculty. After the thesis has been approved, the candidate files two typewritten copies with the Librarian, in whose custody they remain. The candidate is also required to deposit in the library of the University one hundred printed copies of his thesis. The degree may be conferred before the thesis is printed, provided that a security bond is furnished and filed with the Secretary of the Board of Regents. The amount of this bond will be fixed jointly by the Librarian and the Dean of the Graduate College.

Final Examination—After the candidate's thesis has been accepted, he is required to pass a public examination held before an examining committee of not less than three members, including the professors in charge of the major and minor subjects, supplemented by appointment from the Graduate faculty.

REQUIREMENTS FOR THE DEGREE OF MASTER OF ARTS OR MASTER OF SCIENCE

The degree of Master of Arts or Master of Science will not be given for less than one year of resident graduate work. On completion of his studies the candidate must pass a public examination and present an acceptable thesis. The examination is conducted by the departments concerned and a representative of the Graduate Council. The thesis must be submitted and typewritten two weeks before the intended graduation of the candidate. When approved and accepted it is to be bound in a prescribed form and filed with the librarian, in whose custody it remains.

GRADUATE WORK IN ENGINEERING

Graduate work in engineering may be taken by any student who has had preparation in mathematics and science equivalent to that required of undergraduates in engineering, but candidates for the advanced degrees in engineering must, in addition, possess technical preparation equivalent to that required in the undergraduate courses. Graduate work consists of special laboratory investigations, of advanced engineering design or of the collection and reduction of existing data relating to some specific engineering topic. So far as possible such work is arranged to suit the needs of the individual student.

For one full year of resident graduate work with an acceptable thesis covering some phase of the work undertaken, there will be granted the degree of Master of Science in Agricultural, Architectural, Civil, Electrical or Mechanical Engineering, depending upon the particular line of work pursued.

For three full years of resident graduate work in Engineering there will be granted upon the presentation and publication of a suitable thesis the degree of Doctor of Philosophy.

The degrees of Agricultural Engineer, Architectural Engineer, Civil Engineer, Electrical Engineer, or Mechanical Engineer may be conferred upon graduates of the University of Nebraska of not less than five years' standing, who have previously received the degree of B.Sc. in Engineering and who have been in responsible charge of work and done meritorious service in the practice of their professions. At the

time of registering for such degree the candidate will present a detailed statement of his preparation work and experience together with an acceptable topic for a thesis. Not less than one year thereafter, during which time he shall have studied and worked under the general supervision of the chairman of the department in which he expects to take his degree, he shall submit his thesis and present himself for examination in the work done under the supervision mentioned above. If the thesis and examination prove satisfactory, he will be recommended for the degree. In no case will a professional degree be conferred in absentia.

The rules of the Graduate College apply to all graduate work and students taking the same must matriculate in that College.

FELLOWSHIPS AND SCHOLARSHIPS

The University has established a number of graduate fellowships and scholarships with stipend, depending upon the kind and amount of assistance their holders render to the departments in which they are registered. Part of the stipend is the remission of fees other than those for entrance and graduation.

The Graduate Teachers' Diploma

Candidates for the Graduate Teachers' Diploma must have first become candidates for the degree of Doctor of Philosophy or of Master of Arts. It is conferred only upon persons who have received one or other of these degrees. To become a candidate for this diploma the applicant must have met the requirements for the University Teachers' Certificate, and register under advice of the Committee on Requirements, for a major or a minor in Education.

Courses and Instruction

Offered by the Departments of the Graduate College

AGRICULTURAL ENGINEERING

Professors Sjogren *(Chairman)*, Brackett, Associate Professors Smith, Baer, Mr. W. Runnalls

Courses

5. **Rural Architecture**—Planning of farm buildings and farmsteads. Design of beams and columns. Study of methods of construction, building materials and home conveniences. For engineers only. Attendance 2 hours, drawing 3, preparation 4, credit 3. First semester. Mr. Sjogren

6. **Irrigation and Drainage Engineering (Taken in conjunction with C. E. 112)**—Study of problems in irrigation engineering, legal and economic principles. Drainage: Study of different systems, preparation of plans and estimates. Engineers only. Attendance 3 hours, drawing 3, preparation 6, credit 4. Second semester. Mr. Sjogren

7. **Rural Architecture**—Planning of the farmstead. Arrangement, design and construction of farm buildings. Study of water systems, light plants, sewage disposal, ventilation. Advanced non-engineering students. Attendance 2 hours, field work and drawing 6, preparation 4, credit 4. First semester. Mr. Sjogren

8. **Irrigation and Drainage**—Irrigation from the water users' standpoint. Drainage: Study of different systems and methods of installation. Practice with surveying instruments. Advanced non-engineering students. Prerequisite: Agronomy 51. Attendance 2 hours, field work 6, preparation 4, credit 4. Second semester. Mr. Sjogren

15. **Motor Vehicles**—A detailed study of automobiles, trucks and tractors, transmissions, differentials, clutches, brakes, starting and lighting systems, etc. Prerequisite: Course 4. Attendance 2 hours, laboratory 3 or 6, preparation 4, credit 3 or 4. First and second semesters. Mr. Brackett

17. **Advanced Forge Work**—Special studies in welding with gas, steel work, machine repairing, wagon construction and repair, babbitting, soldering and pipe fitting. Prerequisite: Course 2, or M.E. 3 or 3a. Laboratory 6 hours, credit 2. First semester. Mr. Runnalls

18. **Advanced Carpentry**—Course 1 continued. Building construction, cabinet work, furniture making and wagon construction. Prerequisite: Course 1 or M.E. 1. Laboratory 6 hours, credit 2. Second semester. Mr. Baer

19. **Research Work in Rural Architecture, Farm Drainage and Rural Highways**—There is a broad field for original investigation in drainage, water supplies, lighting, heating, building materials, farm

buildings, road construction and sewerage. Prerequisite: Courses 5 and 6, or 7 and 8. Credit 2 to 5 hours.

Mr. Sjogren, Mr. Brackett, Mr. Baer

20. **Research Work in Farm Machinery, Farm Motors and Farm Equipment**—An excellent opportunity is offered for testing in the laboratory and in the field of farm machinery and farm motors; traction tests, calibration and economic tests. Prerequisite: Courses 3 and 4. Credit 2 to 5 hours.

Mr. Sjogren, Mr. Brackett, Mr. Smith

22. **Normal Course in Manual Training**—An advanced course in carpentry which deals with laboratory equipment for small and large classes, with planning courses, designing and working up exercises. Prerequisite: Course 1 or 31. Laboratory 6 hours, credit 2. Second semester. Mr. Baer

24. **Graphics**—Studies in graphic presentation of data, curve plotting, curve analysis, blocking and diagramming data, etc. Open to all but planned especially for agricultural students. Attendance 2 hours, preparation 4, credit 2. Second semester. Mr. Sjogren

400. **Thesis**—Open to seniors on approval. Credit 3 to 5 hours.

AGRONOMY

Professors Burr *(Chairman)*, Kiesselbach, Gaddis, Keim.

Students taking the work below should have completed at least one year's work in Botany and in Chemistry. For programs and thesis subjects, consult instructors before registration.

Courses

101. **Agronomy Seminar**—Presentation and discussion of various agronomic subjects. Reviews of the latest and most important literature and data in agronomy. Prerequisite: Courses 1, 53. Attendance 1 hour, preparation 2, credit 1. First semester.

Departmental Staff

102. **Agronomy Seminar**—Course 101 continued. Second semester.

105. **Methods of Investigation**—Study of methods used in investigational work. Experimental error, methods of computing and expressing same. Consultation, laboratory work, assigned readings and critical examination of investigational reports. Registration by arrangement only. Credit two to five hours. First semester.

Mr. Kiesselbach

106. **Methods of Investigation**—Course 105 continued. Second semester.

109. **Research in Agronomy**—Assignment of special problems in crops and soils for individual investigation. Opportunity and encouragement is offered to those registering for advanced degrees. Open only to men of adequate training by arrangement. Credit according to work. First semester. Departmental Staff.

110. **Research in Agronomy**—Course 109 continued. Second semester.

ANCIENT LANGUAGES

Professors Lees *(Chairman)*, Barber, Associate Professors Sanford, Rice

As a prerequisite to the higher degrees (A.M., Ph.D.) a candidate must have had a major in this department or an equivalent in another institution. The object of the work leading to these degrees is to familiarize the student with Greek and Roman life and thought as expressed in literature, as well as to give him a fair mastery of the basic languages of the Indo-European family. The course of study directed to this end is laid out with the approval of the Dean of the Graduate College. The usual final examination and dissertation are required. The A.M. degree may be taken in one or more of the languages, the Ph.D. in one language as a major and one or two as minors.

The graduate work in Greek, Latin, and Sanskrit is arranged in a cycle of three years, consisting of six semestral courses. In Greek and Latin one semester of each year is devoted to poetry and the other semester to prose. The graduate student is expected to read the more important works of the writers discussed during the semester.

The purpose of the work in Sanskrit is to give the student such a knowledge of basic grammatical forms and syntactical structure as will assist in the comprehension and mastery of classic phenomena and forms, and their relation to derived modern languages.

The graduate semestral courses in Latin arranged by years are—(1) Historiography, Elegiac Poetry; (2) Epistolary Latin, Epic Poetry; (3) Philosophy, The Satire. The cycle of graduate courses in Greek consists of—(1) Epic Poetry, History; (2) Lyric Poetry, Philosophy; (3) Dramatic Poetry, Oratory.

The following courses will be offered in 1920-1921.

201. **Latin Historiography**—Credit three to five hours. First semester.

202. **Latin Elegiac Poetry**—Credit three to five hours. Second semester.

225. **Greek Dramatic Poetry**—Credit three to five hours. First semester.

226. **Greek Oratory**—Credit three to five hours. Second semester.

241. **Beginning Sanskrit**—Inflections and conjugations. Interpretation of an easy text. Credit three hours. First semester.

242. **Elementary Sanskrit**—Selected readings from the Nala and the Hitopadeca. Credit three hours. Second semester.

243. **Advanced Sanskrit**—Selections from the Kathasaritsagara and the Manava Dharmacastra. Credit two to three hours. First semester.

244. **Advanced Sanskrit**—Reading and interpretation of selected hymns of the Rig-Veda. Credit two to three hours. Second semester.

251. **Comparative Phililogy**—Credit one or two hours. First semester.

252. **Comparative Philology**—Course 251 continued. Second semester.

ANIMAL HUSBANDRY

Professors Gramlich *(Chairman)*, Mussehl (Poultry), Associate Professor Loeffel, Assistant Professor Pier, Savin

Students desiring graduate work, with or without reference to a second degree, should consult the Chairman of the department before registration.

Courses

101. **Problems in Animal Production**—Study of experimental methods employed in working out feeding problems, planning and conducting experiments, keeping records and working up experimental data. Hours for consultation. Credit to be arranged. Registration only by permission of instructors. Instructional Staff

APPLIED MACHANICS AND MACHINE DESIGN

Professors Chatburn *(Chairman)*, Slaymaker, Mickey, Assistant Professor Duff, Miss Wyman, Mr. Morris

Courses

106. **Machine Design**—The rational design of machine elements such as shafting, shaft couplings, pulleys, fly-wheels, power-screws, bearings and guides. Prerequisite: Courses 1, 2, 3 and 13. Attendance and drawing 9 hours, credit 3. Second semester.

Mr. Slaymaker

107. **Machine Design**—The systematic application of the principles of applied mechanics to the design of machines. Complete designs, studies of constructive details, calculations of strength of parts and estimates of cost. Prerequisite: Course 106. Attendance and drawing 6 hours, credit 2. First semester. Mr. Slaymaker

108. **Engine Design (Steam and Internal Combustion)**—Working from given horse power and speed the student calculates the principal dimensions and makes detailed assembly and group drawings of the various parts. Credit 2 or 3 hours. Second semester.
Mr. Slaymaker

113. **Stereotomy**—Stone cutting problems. Delineation of stones in structures; patterns, bevels, etc. Applications to designing of forms for artificial stones, arches, culverts, etc. Prerequisite: Courses 1 and 2. Drawing and laboratory 6 hours, credit 2. First and second semesters. Mr. Chatburn

115. **Mechanics of Materials**—Resistance of materials, including reinforced concrete; machanics of beams, columns, shafts, etc.; laboratory experiments. Prerequisite: Course 14. Attendance 3 hours, laboratory 6, preparation 6, credit 5. First semester.
Mr. Chatburn, Mr. Mickey

116. **Mechanics of Materials**—Course 115 condensed for students in the Agricultural, Electrical and Mechanical Engineering groups. Prerequisite: Course 14. Attendance 2 hours, laboratory 3, preparation 4, credit 3. First and second semesters.
Mr. Chatburn, Mr. Mickey

117. **Cement and Concrete Testing**—Classification, composition, manufacture, inspection, sampling and specifications. Practical testing of cement, mortars, concretes. Prerequisite: Course 14. Attendance 1 hour, laboratory 3, preparation 2, credit 2. First and second semesters. Mr. Mickey

118. **Materials of Construction**—Manufacture and general properties. Mechanical properties of materials as revealed by actual tests. Comparison of tests. Continuation of tests begun in Course 117. Attendance 1 hour, laboratory 3, preparation 2, credit 2. Second semester. Mr. Chatburn

122. **Graphic Statics**—Elements of graphic statics applied to engineering construction. Prerequisite: Course 14. Attendance 1 hour, drawing 6, preparation 2, credit 3. Second semester.
Mr. Chatburn

125. **Road Materials Testing**—Examination, classification, and testing of non-bituminous road and pavement materials. Prerequisite or parallel: Course 14 and C. E. 131. Attendance 1 hour, preparation 2, laboratory 3, credit 2. First and second semesters. Mr. Mickey

126. **Road Materials Testing**—Course 125 continued. Special attention given to bituminous materials. Laboratory 6 hours, credit 2. First and second semesters. Mr. Mickey

127. **Specifications and Working Drawings**—Plans, elevations and details of dwelling houses, walls, roofs, cornices, doors, windows, stairs, etc.; specifications and estimate of cost; materials adapted to. Lecture 2 hours, preparation 4, drawing 6, credit 4. First semester.
Mr. Slaymaker

128. **Specifications and Working Drawings**—Foundations; masonry; external finish; bonds; terra-cotta design, etc.; columns, beams, girders and footings; joints and connections; use of architectural hand-books. Lecture 2 hours, drawing 6, preparation 4, credit 4. Second semester. Mr. Slaymaker

133. **Engineering Freehand Sketching**—Quick and accurate freehand shop and architectural sketches in orthographic, cabinet and perspective. Drawing 3, 6, or 9 hours; credit 1, 2, or 3.
Miss Wyman

134. **Advanced Mechanics**—Open to students who have completed Course 14 or Mathematics 4. Attendance 3 hours, preparation 6, credit 3. Second semester. Mr. Chatburn

199. **Thesis**—Open to seniors on approval. Credit 3 to 5 hours.

ASTRONOMY

Professors Swezey *(Chairman)*, Brenke

Master of Arts—Any of the courses in the senior division comprising six hours credit may constitute a minor for a student who takes two minors for his degree. Any two such courses may be taken as a single minor. Two such courses and a thesis constitute a major.

Doctor of Philosophy—The department does not undertake major work for this degree, but the courses offered for the degree of Master of Arts may be chosen as minors by candidates for the doctorate taking their majors in other departments.

COURSES

Meridian Astronomy

113. **Timekeeping**—The use of the transit instrument in the precise determination of time, and the regulation of sidereal and mean time clocks and chronometers. Requires plane trigonometry. Attendance 2 or 3 hours, preparation 4 or 6, credit 2 or 3. First semester.
Mr. Swezey

114. **The Problem of Latitude**—The use of the meridian circle and the zenith telescope in precise determinations of latitude, and kindred problems. Requires plans trigonometry. Attendance 2 or 3 hours, preparation 4 or 6, credit 2 or 3. Second semester. Mr. Swezey

Astrophysics

115. **Astronomical Spectroscopy**—An acquaintance with the various types of spectroscopes, spectografs, and spectroheliografs used by astronomers; measurement of spectograms for wave length and radial motion. Attendance 2 or 3 hours, preparation 4 or 6, credit 2 or 3. First semester. Mr. Swezey

116. **Astronomical Photography**—Methods used in photographing the sky. The measurement of photographs for finding precise positions and dimensions. Attendance 2 or 3 hours, preparation 4 or 6, credit 2 or 3. Second semester. Mr. Swezey

Mathematical Astronomy

121. **Celestial Mechanics**—Requires calculus. Credit three hours. First semester. Mr. Brenke

122. **Celestial Mechanics**—Course 121 continued. Second semester.

BACTERIOLOGY AND PATHOLOGY

Professor Waite

As requirements for registration in this department for advanced degrees, the applicant must have completed work equivalent to that of a general scientific course in this University. The ability to read German and French is necessary. Before registration for an advanced degree the candidate must consult the chairman of the department.

Master of Arts—Second minor: Courses 101 and 103, or 101 and 104. First minor: Courses 101 and 103, or 101 and 104 and its equivalent along some special line of research. Major: Advanced work following the courses outlined above with a thesis.

COURSES

101. **Elementary Bacteriology**—Introduction to the study of Bacteriology. The relation of bacteria to other organisms. Morphology, structure, chemical composition, and chemical changes produced. Prerequisite: One year Chemistry. Attendance 2 hours, laboratory 4, credit 2. First and second semesters. Mr. Waite, Lecture
Mr. Lindgren, Laboratory

103. **Dairy Bacteriology**—Sources of bacteria in milk. Lactic and butyric acid fermentations, peptonizing and rennet-forming bacteria. Relation of milk to spread of disease. Micro-organisms in butter and

cheese making. Prerequisite: Course 101. Attendance 2 hours, laboratory 4, credit 2. First semester. Mr. Waite, Lecture
Mr. Lindgren, Laboratory

104. **Agricultural Bacteriology**—Nitrogen problem. Bacteria in ammoniacal fermentation, nitrification and dentrification. Bacteria as a means of reclaiming nitrogen lost from the soil. Pure cultures in growing leguminous plants. Azobacteria. Prerequisite: Course 101. Attendance 2 hours, laboratory 4, credit 2. Second semester.
Mr. Waite, Lecture
Mr. Lindgren, Laboratory

105. **Bacteriology**—Morphology, structure and chemical composition of micro-organisms; chemical changes which they produce; principles of sterilization and disinfection; pathogenic bacteria found in the mouth; immunity and methods of securing it. Prerequisite: One year Chemistry. Attendance 4 hours, laboratory 8, credit 4. First semester. Mr. Waite, Lecture
Mr. Lindgren, Laboratory

BOTANY

Professors Pool *(Chairman)*, Weaver, Associate Professors E. R. Walker, L. B. Walker

Before registering for an advanced degree in this department, the student must have satisfactorily completed general botany (Courses 1, 2 or 7), general morphology (Courses 3 and 4), plant physiology (Courses 19 and 20), plant pathology (Courses 25 and 26), or their equivalent (24 hours), and one year of zoology.

After approved by instructors, students may register for the following courses:

Master of Arts—For major, candidates may select work in cytology, histology, systematic botany, physiology, ecology, and pathology, Courses 237 to 247; for minors, any courses excepting 1, 2, 3, 4, 7, 19, 20, 25, 26.

Doctor of Philosophy—Majors: Courses 237 to 247. Minors: Any courses which the student is prepared to enter excepting 1, 2, 3, 4, 7, 19, 20, 25, 26.

A number of scholarships and fellowships in botany are available in the Graduate College for properly equipped students wishing to enter upon graduate work in botany. Information relative to these positions may be secured from the Dean of the Graduate College or from the Chairman of this department.

COURSES

(Students may register for any of these courses year after year until the completion of their problem.)

237. **Research in Mycology**—Assigned problems in field and laboratory. Credit five to ten hours. First and second semesters.
Miss L. B. Walker

241. **Research in Taxoconomy**—Assigned problems in field and herbarium. Credit five to ten hours. First and second semesters.
Mr. Pool

243. **Research in Morphology**—Assigned problems in the morphology of a plant or group of plants. Credit five to ten hours. First and second semesters. Mr. Pool, Miss E. R. Walker

245. **Research in Physiology or Ecology**—Assigned problems in field and laboratory. Credit five to ten hours. First and second semesters. Mr. Pool, Mr. Weaver

247. **Research in Plant Pathology**—Assigned problems in the field and laboratory. Credit five to ten hours. First and second semesters. Miss L. B. Walker

CHEMISTRY

Professors Upson *(Chairman)*, Deming, McLeod, Associate Professors Brown, Frankforter

For the Master's Degree

For the Master's degree a dissertation and not less than 15 hours in advance of Courses 20, 134, and 151, are required. These should be selected on consultation with the chairman of the department. The thesis must embody the results of research under the direction of a member of the department.

For the Degree of Doctor of Philosophy

1. Candidates for the degree of Doctor of Philosophy must present a thesis embodying the results of original investigation in one of the divisions of Chemistry. The investigation is usually carried out under the direction of a member of the department and occupies from three to five semesters depending on the student's preparation.

2. The candidate must select not less than 40 hours according to the thesis subject from the following courses: 105, 122, 123, 143, 144, 152, 158, 167, 210, 235, 236, 237, 238, 239, 240, 253, 254, 255.

3. In addition to fulfilling the above requirements the candidate must select a minor of from 10 to 15 hours of work of an advanced character in some other department. Minors should be selected from the following subjects: Physics, Botany, Bacteriology, and Geology.

4. At least one year prior to taking his degree the candidate must pass a preliminary examination in his major subject. This examination may be waived in case the candidate holds a Master's degree from this institution. The candidate must also pass a final written and oral examination in the major and minor subjects.

Students selecting a minor in Chemistry for the Ph.D. degree must complete 12 hours or more in advance of Courses 20, 31, and 151.

COURSES

210. **Special Topics in Inorganic Chemistry**—Discussion of selected topics in inorganic chemistry such as complex salts, hydrates, peroxides, Werener's theory, etc. The topics may be changed from year to year. Prerequisite: Courses 122 and 152. Credit two hours. Second semester. Mr. Deming

235. **Seminar in Organic Chemistry**—Prerequisite: Course 134. Credit three to five hours. First semester alternate years. Mr. Upson

236. **Seminar in Organic Chemistry**—Course 235 continued. Credit three hours. Second semester alternate years. Mr. Upson

237. **Seminar in Organic Chemistry**—Course 236 continued. Credit three hours. First semester álternate years. Mr. Upson

238. **Seminar in Organic Chemistry**—Course 237 continued. Credit three hours. Second semester alternate years. Mr. Upson

Note: Courses 235, 236, 237, 238 form a continuous course covering a period of two years. Students may enter either year. Readings based on Cohen's **Organic Chemistry for Advanced Students**, assigned readings, readings in periodicals.

The ability to read French and German is essential.

239. **Advanced Organic Preparations**—Laboratory work in organic chemistry preparatory to research. The preparation of a number of typical organic compounds. Prerequisite: Course 134. Credit three to five hours. First semester. Mr. Upson

240. **Advanced Organic Preparations**—Course 239 continued. The repetition of some classical piece of organic research. Second semester.

253. **Advanced Physical Chemistry**—The kinetic molecular theory. Chemical kinetics. Prerequisite: Course 152 and a full year of Calculus. Credit three to five hours. First semester. Mr. Deming

254. **Advanced Physical Chemistry**—Course 253 continued. Thermodynamics, chemical equilibrium, quantum theory. Second semester.

255. **Special Topics in Inorganic and Physical Chemistry**—Topics may be varied from year to year. Prerequisite: Course 152. Credit two hours. First semester. Mr. Brown

Research in Chemistry

The following courses include from thirty to forty hours per week of laboratory work in one of the divisions of chemistry under the direction of a member of the department. The research work for a Doctor's thesis requires from three to five semesters. The candidate must satisfy the members of the department that he has had adequate training before he will be admitted to research.

280. **Research in Organic, Physico-Organic, or Colloid Chemistry.** Mr. Upson

282. **Research in Inorganic or Physical Chemistry.** Mr. Deming

284. **Research in Industrial Chemistry.** Mr. Frankforter

286. **Research in Analytical or Physical Chemistry.** Mr. Brown

288. **Research in Organic Chemistry.** Mr. McLeod

CIVIL ENGINEERING

Professors Mickey *(Chairman)*, Associate Professors Grant, Davis, Gehrig

COURSES

111. **Hydraulics**—(For Civil Engineering students)—Hydro- statics. The flow of water through orifices, pipes and open channels; use of the weir, current meter and other devices in measuring the flow of water. Prerequisite: Calculus and Applied Mechanics 14. Attendance 3 hours, preparation 6, credit 3. First semester.

112. **Irrigation Engineering**—The use of water in irrigation. Canals, flumes and pipe lines; the design of irrigation structures; analysis of hydrographic data; organization of irrigation projects. Prerequisite: Hydraulics. Attendance 3 hours, preparation 6, credit 3. Second semester.

113, **Masonry Construction**—Materials, their occurrence, preparation and use. Foundations, culverts, retaining walls, arches, abutments, dams. Prerequisite: Applied Mechanics 14. Attendance 3 hours, preparation 6, credit 3. First semester. Mr. Gehrig

114. **Route Surveying**—Theory and practice of the methods utilized in the location and construction of railroads, highways and canals; vertical and circular curves; earth-work surveys and computations. Prerequisite: Course 10. Attendance 1 hour, field and office 6, preparation 2, credit 3. Second semester. Mr. Davis

116. **Stresses in Framed Structures**—(For Civil and Architectural Engineering students.) Roof, highway and railway bridge trusses. Office buildings. Influence lines and equivalent uniform loads. Prerequisite: Applied Mechanics 115. Attendance 4 hours, preparation 8, credit 4. Second semester. Mr. Gehrig

125. **Steel Design**—Design of roof trusses, highway and railway bridges, office buildings and miscellaneous structures. Prerequisite: Course 116. Attendance 1 hour, drafting 6, preparation 2, credit 3. First semester. Mr. Gehrig

127. **Reinforced Concrete Design**—Design of buildings, retaining walls, slab and girder bridges, and arches. Prerequisite: Applied Mechanics 115. Drafting and class 6 hours, credit 2. First semester. Mr. Gehrig

131. **Roads and Pavements**—Lectures, assigned readings, and reports. Attendance 2 hours, preparation 4, credit 2. First semester.

132. **Highway Engineering**—Special technical course for students who elect Highway Engineering option. Prerequisite: Course 131. Attendance 3 hours, preparation 6, credit 3. Second semester.

141. **Hydrology**—Occurrence of water in nature; rainfall, seepage, evaporation and run-off; the use of hydrological data in problems of irrigation, water power and water supply. Prerequisite: Hydraulics. Attendance 2 hours, preparation 4, credit 2. First semester. Mr. Davis

142. **Hydraulic Engineering**—Hydraulic development for drainage, power and transportation; flood protection; principles involved in the design of dams, reservoirs and power plants. Prerequisite: Hydraulics. Attendance 3 hours, preparation 6, credit 3. Second semester.

151. **Railroad and Highway Construction**—Theory and practice in the construction of road-bed, tunnels and minor structures; study of contractor's organization and construction plant; cost data and analysis, specifications and estimates. Prerequisite: Course 114. Attendance 2 hours, preparation 4, credit 2. First semester.

152. **Railway Engineering**—Theory and practice of railway location; equipment of railways; railway organization; cost, receipts, and operating expenses. Prerequisite: Course 151. Attendance 3 hours, preparation 6, credit 3. Second semester. Mr. Davis

161. **Water Supply of Cities**—Sources, quality, quantity, collection, purification, pumping and distribution of municipal and institutional water supplies. Prerequisite: Hydraulics. Attendance 2 hours, preparation 4, credit 2. First semester. Mr. Grant

162. **Sanitary Engineering**—Sewer design and construction; sewage disposal. Prerequisite: Course 161. Attendance 3 hours, preparation 6, credit 3. Second semester. Mr. Grant

171. **Bridge and Building Construction**—Equipment and methods used in erection; organization, labor, costs, estimates. Prerequisite: Course 116. Attendance 2 hours, preparation 4, credit 2. First semester. Mr. Gehrig

172. **Higher Structures**—Cantilever and swing bridges. The steel arch. Indeterminate structures. Williot diagram. Temperature stresses. Theorem of least work. Prerequisite: Course 125. Attendance 3 hours, preparation 6, credit 3. Second semester. Mr. Gehrig

180. **Engineering Economics**—Report writing based on investigations made by the students; economics as applied to engineering works. Attendance 2 hours, preparation 4, credit 2. Second semester.

200. **Thesis**—Open to seniors, on approval. Credit three to five hours.

DAIRY HUSBANDRY

Professor Frandsen *(Chairman)*, Assistant Professors Hendrickson, Luithly

This department is well equipped to give training in advanced as well as initial courses. Graduate instruction is offered for—(1) Students preparing to teach some phase of dairying in colleges and universities; (2) Persons wishing to broaden their knowledge as experts in dairying; and (3) Students holding first degrees who are particularly interested in research and investigational work in dairying.

COURSES

101. **Research Methods**—A critical study of the methods employed in conducting work at this and other stations. Attendance 1 hour, preparation 2, credit 1. First semester.

Mr. Frandsen, Mr. Hendrickson

102. **Research Methods**—Course 101 continued. Second semester.

103. **Research in Milk Production**—Study of problems in breeding, feeding and management of dairy cattle; production and marketing of milk. Qualified students may assist in experimental investigations and in certain instances undertake independent problems. Thesis required. First semester. Mr. Frandsen, Mr. Hendrickson

104. **Research in Milk Production**—Course 103 continued. Second semester.

105. **Research in Dairy Manufactures**—Opportunity and facilities are provided for investigation in special problems related to butter-making, cheese making and ice cream making. First semester.

Mr. Frandsen, Mr. Luithly

106. **Research in Dairy Manufactures**—Course 105 continued. Second semester.

ECONOMICS AND COMMERCE

Professors LeRossignol *(Chairman)*, Virtue, Martin, Associate Professors Ivey, Kirshman, Assistant Professors Bullock, Cole, Instructor Conner

Candidates for the degree of Master of Arts are required to complete at least one year's work and to present a satisfactory thesis, showing ability to carry on independent investigation and to assemble the results. A candidate may give all his time to economic studies, or he may offer a major (24 hours) in this department and a minor (10 hours) in another.

Candidates for the degree of Doctor of Philosophy are required to complete at least the equivalent of three year's work after taking the Bachelor's degree or two years' work after the Master's degree, but the degree will not be granted unless the candidate attains a satisfactory standard of scholarship, irrespective of time of residence or study. In addition to his major course, which should represent about three-fifths of the total work, the candidate may offer one minor or two. Candidates taking a major in Economics are usually advised to take minors in History, Political Science, Philosophy or other subjects more or less closely related to the major. In every case a thesis is required, embodying the results of original investigation.

COURSES

Prerequisite for all senior division and graduate courses: Courses 11 and 12.

101. **Money and Banking**—History and theory of money and banking; paper money issues of Europe; prevention of inflation; gold movements; foreign exchange rates; war banking; Chinese currency reform; gold exchange standard; Federal Reserve Act. Attendance 3 hours, preparation 6, credit 3. First semester.

102. **Practical Banking**—A course in banking practice, treating of the actual operations of the various departments of a bank. Loans, collateral, domestic and foreign exchange, bank accounts, advertising and collections. Lectures 3 hours, laboratory 2, preparation 4, credit 3. Second semester.

105. **Corporation Finance**—Financial policy of industrial and other corporations; promotion; capitalization in theory and practice; determination and disposal of net income; surplus and reserve; receivership and reorganization; analysis of accounts and reports. Lectures 2 hours, preparation 4, credit 2. First semester.

Mr. Kirshman

106. **Investment and the Money Market**—Principles and individual problems in investment; stocks and bonds of public utility; industrial and mining corporations; mortgages; public bonds; the money market; international investments; speculation; rating of securities. Lectures 2 hours, preparation 4, credit 2. Second semester. Mr. Kirshman

108. **Trust Problems**—Rise and development of trusts; large-scale production and monopoly in relation to the formation of trusts; dangers from their unrestricted operation; remedies; federal and state anti-trust laws and decisions. Lectures 2 hours, preparation 4, credit 2. Second semester.

109. **Economic Crises**—Comparative study of crises from the seventeenth century to the present. Theory of crises; transmission of crises from country to country; fluctuation in investment, bank items, and prices; business barometrics. Lectures 2 hours, preparation 4, credit 2. First semester.

111. **Fire Insurance**—History and economics of fire insurance; analysis of hazard; determination of the rate; organization of companies and agencies; the standard policy; coinsurance and reinsurance; loss adjustment; finances of companies; public regulation; Nebraska code and practice. Lectures 3 hours, preparation 6, credit 3. First semester. Mr. Kirshman

112. **Life Insurance**—History of life insurance; insurance administration; governmental control; methods of computing premiums; organization and management of agencies; taxation; comparative study of policy contracts. For the mathematical basis of insurance see Mathematics 42. Lectures 3 hours, preparation 6, credit 3. Second semester. Mr. Kirshman

116. **Statistics**—Theory, preparation and interpretation of statistics; kinds of averages and their uses; frequency curves; the normal curve of distribution; correlation; accuracy; graphic methods. Attendance 2 hours, laboratory 3, preparation 1, credit 2. Second semester.

120. **Tariff History of the United States**—Relation of the tariff to industry and trade; tariff systems of other countries; protection and free trade; reciprocity agreements; selected industries in relation to tariff legislation; tariff administration. Lectures 2 hours, preparation 4, credit 2. Second semester. *(Not given in 1920-1921.)*
Mr. Virtue

122. **International Trade and Trade Policies**—Historical sketch of modern commerce; present trade of leading nations; theory of international trade; commercial policies; agencies for promoting for-

eign commerce; organization of ocean shipping; relation between war and commerce. Lectures 3 hours, preparation 6, credit 3. Second semester. Mr. Virtue

124. **Financial History of the United States**—Financial operations of the federal government since 1789; sources of federal revenue and objects of expenditure; financial management in time of war; the public debt; evolution of monetary and banking systems. Lectures 3 hours, preparation 6, credit 3. Second semester. *(Not given in 1920-1921.)* Mr. Virtue

125. **Railway Economics**—The transportation system; the railway services; relations between carriers—competition, cooperation, pools; financial methods; theory and practice of rate-making; regulation by state and federal governments; war administration; post-war readjustments. Lectures 3 hours, preparation 6, credit 3. First semester. Mr. Virtue

131. **Advertising**—The theory, practice and technique of advertising; its relation to the market and marketing methods; media. Assignments given in the formulation of campaigns, writing copy, designing layouts, selecting color and type. Lectures 2 hours, preparation 4, credit 2. First semester. Mr. Ivey

132. **Advertising**—Course 131 continued. Second semester.

136. **Salesmanship and Sales Management**—Wholesale, retail and specialty salesmanship. A study of different types of customers and their buying motives; the relationships of merchandise; the mental law of sale; meeting objections; selling by suggestion; sales campaigns. Demonstration sales. Lectures 2 hours, preparation 4, credit 2. Second semester. Mr. Ivey

141. **Business Organization**—Study of the underlying principles of organization and management and their application in various types of business undertakings. Lectures 2 hours, preparation 4, credit 2. First semester. Mr. Martin

142. **Business Organization**—Course 141 continued. Second semester.

151. **Cost Accounting**—Essential features of accounting for manufacturing concerns with particular reference to the securing of unit costs and the application of cost data in plant management. Attendance 2 hours, laboratory 3, preparation 4, credit 3. First semester. Mr. Cole

153. **Advanced Accounting**—Advanced theory of accounting with practice in the solution of problems selected from C.P.A. examinations. Valuation of assets; capital vs. revenue expenditures; good-

will; depreciation; reserves and reserve funds; sinking funds. Attendance 3 hours, preparation 6, credit 3. First semester.

Mr. Martin

154. **Advanced Accounting**—Course 153 continued. Realization and liquidation accounts; insolvency accounts; executorship and trustee accounts; governmental accounting; insurance company accounts, and similar topics. Second semester.

155. **Auditing**—Duties and responsibilities of an auditor; the methods of conducting various kinds of audits; the preparation of the auditor's report; the auditor's certificate; special problems in the audit of different kinds of business undertakings. Attendance 2 hours, preparation 4, credit 2. First semester. Mr. Martin

161. **Business Law**—Contracts, including mistake, fraud, duress, and capacity of parties; sales and mortgages of personal property; bailments. Attendance 3 hours, preparation 6, credit 3. First semester. Mr. Bullock

162. **Business Law**—Course 161 continued. Negotiable instruments; suretyship and guaranty; agency; partnership; private corporations; bankruptcy. Second semester. Mr. Bullock

164. **Business Law**—Study of the law relating to particular kinds of business. Open to a limited number of senior students. Credit 1 hour. Second semester. Mr. Bullock

171. **Public Finance**—Principles of public finance; public expenditures; sources of revenue; nature of the taxing power; tax systems of leading countries; the income tax; financial administration; the budgets; public debts; war finance. Attendance 3 hours, preparation 6, credit 3. First semester. Mr. Virtue

172. **Public Finance**—State and local taxation. Course 171 continued. The course deals mainly with revenue problems in Nebraska and other states; movement for tax reform; the Single Tax. Second semester.

181. **Labor Problems**—History of the labor movement in Europe and America; theory of wages; methods of remuneration; migration; rise and fall of wages; labor legislation; labor and the war. Attendance 3 hours, preparation 6, credit 3. First semester. *(Not given in 1920-1921.)*

182. **Methods of Industrial Peace**—Organizations of employers and laborers; strikes and settlement of disputes; trade agreements; voluntary and compulsory arbitration; experience of New Zealand, Australia and Canada. Attendance 3 hours, preparation 6, credit 3. Second semester. Mr. LeRossignol

185. **Socialism**—History of socialistic thought before the French Revolution; Utopian theories of Owen, Saint-Simon, Fourier; anarchistic theories of Proudhon and Bakunin; Karl Marx and other German socialists; syndicalism; the I. W. W.; bolshevism. Attendance 3 hours, preparation 6, credit 3. First semester. Mr. LeRossignol

191. **Advanced Economics**—Review of economic theory, together with a history of economic thought, ancient, mediaeval and modern; recent economic theories in relation to industrial conditions. Attendance 2 hours, preparation 4, credit 2. First semester.
Mr. LeRossignol

192. **Advanced Economics**—Course 191 continued. Second semester.

201. **Economic Seminar**—Intensive study of selected subjects under the personal direction of members of the Faculty. Reports of investigations by students and Faculty. General discussion and criticism. Credit one to three hours. First semester.
Mr. LeRossignol

202. **Economic Seminar**—Course 201 continued. Second semester.

EDUCATION

Professors Fordyce, Sealock, Earhart, Reed, **Taylor**, Mr. Lantz

The graduate courses in Education aim to give the candidate such academic and professional preparation as may fit him for administrative and supervisory functions in the larger school systems, for skill in departmental teaching or for chairs in normal schools and colleges. The courses offered are in the following four departments: Elementary Education, Secondary Education, Supervision and School Administration, and Education and Mental Measurements and Research. The Teachers College is the headquarters of the Nebraska Bureau of educational measurements which provides opportunity for apprenticement in the field of research.

The courses are open to such students as meet the requirements for matriculation in the graduate college and who have had such preliminary training as is represented by the Teachers College Diploma and the University Teachers Certificate. For the degree of Master of Arts the candidate must complete thirty-two semester hours including a thesis of at least five hours in value; the courses may be wholly in Education or may be divided between a major in Education and a minor in other departments or the minor may be in Education and the major in other departments. The thesis for the second degree need not involve to any appreciable degree original work but it must show ability to collect, organize, and interpret educational data and give evidence that the literature involved has had a critical study.

The Graduate Teachers Diploma

Graduate students pursuing a major or a minor in Education for either the Master's or Doctor's degree, who in addition to qualifying for the degree give evidence of skill in the field of teaching or supervision and administration are awarded the Graduate Teachers Diploma, which is accepted as a professional teacher's certificate in Nebraska and in most other states. The candidate for this diploma must in addition to the work prescribed for the advanced degree give promise of superior professional service in the field of education thru character, technical training, and either tested successful experience or thru a semester devoted either to teaching or supervision in the Teachers College High School. The granting of the advanced degree is indicative of the quantum and quality of the academic achievements while the Teachers Diploma gives evidence of the ability to apply the achievement in professional service.

COURSES

I. Supervision and Criticism of Instruction

Professors Fordyce *(Chairman)*, Earhart

211. **The Junior High School**—Study of the history, purpose, curriculum, organization and special methods in junior high schools. Lectures, readings and investigation of special problems. Attendance 2 hours, preparation 4, credit 2. First semester.
Miss Earhart

212. **Professional Course for Elementary School Principals, Supervisors and Critic Teachers**—The relation of supervision to the aims of the elementary school; standards of supervision; testing the quality and results of instruction; providing necessary aids. Attendance 2 hours, preparation 4, credit 2. Second semester. Miss Earhart

271. **Seminary in the Technique of Instruction of English**—Advanced study of problems in the teaching of English. Credit two hours. First semester. Mr. Stuff

272. **Seminary in the Technique of Instruction of English**—Course 271 continued. Second semester.

281. **Measurement and Experimental Education**—Consideration of the standards and scales for the measurement of educational achievements together with the experimental and statistical technique essential to applying to these standards in supervision. Credit two hours. First semester. Mr. Fordyce

282. **Measurement of Intelligence**—Mental tests as an instrument in measuring intellectual capacity and as an aid in teaching and supervision. Practical work demonstrating the use of the tests. Credit two hours. Second semester. Mr. Fordyce

283. **School Surveys**—The results of the principal surveys and the technique of conducting such surveys as the basis of field investigation. Students assigned a school system to study for a year, the results being embodied in a detailed report. Prerequisites: Courses 281, 282. Credit two to three hours. First semester. Mr. Fordyce

284. **School Surveys**—Course 283 continued. Second semester.

285. **Graduate Seminar**—Study of recent educational literature and such educational problems as lend themselves to investigation in the organization and administration of public school systems and studies leading to theses and higher degrees in Education. Credit one or two hours. First semester. Mr. Fordyce

286. **Graduate Seminar**—Course 285 continued. Second semester.

II. History and Principles of Education

Professor Sealock *(Chairman)*

231. **History of Ancient and Mediaeval Education**—Study of the education of the period from the standpoint of its political, social, economic and religious problems. Comparisons with present educational situation. Special attention to source of material. Attendance 2 hours, preparation 4, credit 2. First semester. Mr. Sealock

232. **Advanced Course in the History of Modern Education**—Study of the various aspects of education during this period in order to secure a clear and comprehensive understanding of the educational problems of today. Attendance 2 hours, preparation 4, credit 2. Second semester. Mr. Sealock

237. **Education and Democracy**—Fundamental doctrines and principles underlying education in a democracy, psychological and sociological bases, relation of education to progress, the state and education. Attendance 2 hours, preparation 4, credit 2. First semester. Mr. Sealock

238. **Project Method and the Curriculum**—Principles involved in the selection of subject matter and in determining methods of instruction; psychological and sociological basis of the project method; its relation to the curriculum and the aim of education. Attendance 2 hours, preparation 4, credit 2. Second semester. Mr. Sealock

III. School Administration

Professors Taylor *(Chairman)*, Reed

242. **The Secondary School**—An advanced course in the aims and organization of the secondary school. Attendance 2 hours, preparation 4, credit 2. Second semester. Mr. Reed

252. **School Organization**—For superintendents and principals. National and state control of education. The county, township, city, district and consolidated district unit. School buildings, teaching personnel, finances and statistical method. Attendance 2 hours, preparation 4, credit 2. Second semester. Mr. Taylor

ELECTRICAL ENGINEERING

Professor Ferguson *(Chairman)*, Associate Professor Hollister
Assistant Professor Edison

COURSES

107. **Alternating Currents**—Problems of operation and design. Prerequisite: Course 106. Attendance 3 hours, preparation 6, credit 3. First semester. Mr. Hollister

116. **Technical Reports**—Preparation and presentation of reports upon technical subjects. Prerequisite: Courses 4, 105, and 106. Attendance 2 hours, preparation 4, credit 2. Second semester. Mr. Hollister

135. **Electrical Laboratory**—Practice in operating and testing direct-current generators, motors and other apparatus. Prerequisite: Course 4 and registration in Course 105. Laboratory 3 hours, preparation 3, credit 2. First semester. Mr. Edison

136. **Electrical Laboratory**—Continuation of Course 135, involving alternating-current apparatus. Prerequisite: Course 135 and registration in 106. Laboratory 3 hours, preparation 3, credit 2. (Or may be increased pro rata to three hours credit.) Second semester. Mr. Edison

137. **Electrical Laboratory**—Advanced practice and use of some special apparatus. Prerequisite: Course 136 and registration in 107. Laboratory 3 hours, preparation 3, credit 2. (Or may be increased pro rata to three hours credit.) First semester. Mr. Hollister

138. **Advanced Alternating Currents**—Continuation of Courses 107 and 137, with special correlated class and laboratory work. Attendance 2 hours, laboratory 3, preparation 7, credit 4. Second semester.

152. **Electro-Chemical Engineering**—Elements of electro-chemistry, with special emphasis placed upon some of the commercially most important processes as metal-winning, furnaces, storage batteries, etc. Prerequisite: Courses 105 and 135. Attendance 2 hours, preparation 4, credit 2. Second semester. Mr. Ferguson

153. **Engineering Problems**—Engineering problems demanding a knowledge of algebra, trigonometry, calculus, vectors, mechanics, electrical phenomena, alternating-current circuits, etc. Prerequisite:

Courses 106 and 136, Math. 4 and Physics 4. Attendance 2 hours, preparation 4, credit 2. First semester. Mr. Ferguson

154. **Electric Railways**—Preliminary estimates and economics, construction, equipment and operation. Prerequisite: Courses 105 and 135. Attendance 3 hours, preparation 6, credit 3. Second semester. Mr. Ferguson

155. **Electric Lighting and Illumination**—Wiring codes, lighting apparatus and circuits, illumination and illuminating engineering. Prerequisite: for Electrical Engineers—Course 4 and Physics 4; for Architectural Engineers—Course 91 and Physics 4. Attendance 3 hours, preparation 6, credit 3. First semester. Mr. Edison

158. **Electric Power Systems**—Generation, transmission, distribution and utilization of power. Prerequisite: Courses 106 and 136. Attendance 3 hours, preparation 6, credit 3. Second semester. Mr. Edison

159. **Telephone Engineering**—Line construction, instruments, switchboards, systems, operation, etc. Prerequisite: Courses 106 and 136. Attendance 2 hours, preparation 4, credit 2. First semester. Mr. Hollister

163. **Radio-Communication**—A fundamental course in theory and practice of radio-telegraphy and radio-telephony. Open to electrical engineering seniors upon approval. Credit two or three hours. Class attendance and laboratory arranged. First semester. Mr. Ferguson

231. **Electrical Laboratory**—Advanced investigations. Hours and credit to be arranged. First semester. Mr. Ferguson, Mr. Hollister

232. **Electrical Laboratory**—Course 231 continued. Second semester.

251. **Alternating Currents**—Transients, electric waves, etc. Credit three hours. First or second semester. Mr. Ferguson

261. **Electrical Design**—Advanced electrical apparatus design. Credit three hours. First or second semester. Mr. Ferguson

269. **Thesis**—Required of graduate students.

ENGLISH

Professors Sherman *(Chairman)*, Frye, Fogg, Buck, Stuff, Pound, Gass, Associate Professor Scott, Assistant Professor McPhee

Courses leading to the Doctor's or Master's degree will be arranged on application to the Dean of the Graduate College and the instructor concerned.

COURSES

107. **English Composition**—Advanced course. Studies in the organization of literary material. Prerequisite: Courses 1 and 2. Attendance 2 hours, preparation 7, credit 3. First semester. Mr. Frye

108. **English Composition**—Course 107 continued. Critical studies in style and structure. The tendencies of English prose, Classicism and Romanticism. Second semester.

121. **American Literature**—Its relation to national life and thought. Lectures, collateral readings, and reports. Attendance 2 hours, preparation 4, credit 2. First semester. Miss Pound

122. **American Literature**—Course 121 continued. Second semester.

123. **History of English Literature**—Survey of the development of English literature; rise of literary forms, periods of literary history, various formative and other influences. Special class study of Chaucer, Spenser, Milton, and others. Attendance 3 hours, preparation 6, credit 3. First semester. Miss Pound

124. **History of English Literature**—Course 123 continued. Second semester.

125. **English Literature from Spenser and Milton**—Critical study of the writers from 1580 to 1642 exclusive of the drama. Prerequisite: Courses 21 and 22. Attendance 2 hours, preparation 7, credit 3. First semester. Mr. Buck

126. **English Literature from Milton to Dryden**—Course 125 continued. Second semester.

127. **Eighteenth Century Literature**—From Dryden to Johnson. Attendance 2 hours, preparation 7, credit 3. First semester. Mr. Frye

128. **Eighteenth Century Literature**—Course 127 continued. Second semester.

129. **English Lyric Poetry**—Nature of the lyric. Survey of leading lyric kinds and types; ballads, sonnets, odes, elegies, etc. History of the English lyric. Attendance 2 hours, preparation 4, credit 2. First semester. Miss Pound

131. **Nineteenth Century English Poets**—English poets from 1798 to 1900. The romantic movement of the early nineteenth century. The Victorian period. Preliminary completion of Courses 123 and 124, tho desirable is not essential. Attendance 2 hours, preparation 4, credit 2. First semester. Miss Pound

132. **Nineteenth Century English Poets**—Course 131 continued. Second semester.

133. **Job**—A comparative study of literature in English. Prerequisite: Courses 21, 22. Attendance 2 hours, preparation 4, credit 2. First semester. Mr. Stuff

134. **The Gospels as Literature**—Comparative studies from other literatures. Prerequisite: Courses 21, 22. Attendance 2 hours, preparation 4, credit 2. Second semester. Mr. Stuff

135. **Shakespeare**—Advanced studies in dramatic art, as represented in *Cymbeline, The Winter's Tale, Coriolanus.* Prerequisite: Courses 21, 22. Attendance 2 hours, preparation 4, credit 2. First semester. *(Not given in 1920-1921.)* Mr. Sherman

136. **Shakespeare**—Course 135 continued. *Romeo and Juliet, Twelfth Night, King Lear.* Second semester. *(Not given in 1920-1921.)*

137. **Browning**—Written studies of *Luria, Return of the Druses, Pippa Passes.* Prerequisite: Courses 21, 22. Attendance 2 hours, preparation 4, credit 2. First semester. Mr. Sherman

138. **Browning**—Course 137 continued. *The Ring and the Book, Sordello.* Second semester.

139. **The Novel**—Its relation to the expression of life. Study of modes and art principles in the interpretation of life. Prerequisite: Courses 21, 22. Attendance 2 hours, preparation 4, credit 2. First semester. Mr. Stuff

140. **The Novel**—Course 139 continued. Second semester.

151. **Study of the Development and of Present Tendencies in English Prose**—Prerequisite: Courses 21, 22. Attendance 2 hours, preparation 4, credit 2. First semester. Mr. Sherman

152. **Development of Modern Prose**—Course 151 continued. Second semester.

153. **Theories of Style**—A discussion of the ideas of Matthew Arnold, Pater, DeQuincey, and their predecessors on the subject of prose style. Prerequisite: Courses 1 and 2. Attendance 2 hours, preparation 4, credit 2. First semester. Mr. Gass

154. **Theories of Style**—Course 153 continued. Second semester.

155. **The Nineteenth Century Essay**—A critical course based upon selected works of masters of modern English prose—Jeffrey, Hazlitt, Macaulay, Lamb, DeQuincey, Carlyle, Ruskin, Arnold, Newman, and Stevenson. Prerequisite: Courses 1 and 2. Attendance 2 hours, preparation 4, credit 2. First semester. Mr. Fogg

156. **The Nineteenth Century Essay**—Course 155 continued. Second semester.

157. **Contemporary Drama**—Studies in the construction and criticism of the modern play. Admission on approval of instructor. Attendance 2 or 3 hours, preparation 4 or 6, credit 2 or 3. First semester.
Mr. Scott

158. **Contemporary Drama and Fiction**—Course 157 continued. Second semester.

171. **Essentials of Old English: Outline of Old English Grammar**—Reading at earliest moment of prose and poetic specimens. *Beowulf* thru 500 lines. Introductory to the history of the English languages and the history of Old English literature. Attendance 4 hours, preparation 8, credit 4. First semester. Miss Pound

172. **Old and Middle English and History of the English Language**—Course 171 continued *Beowulf* continued. The development of the language traced from Old to Modern English, the history of inflections, sound changes, spelling, etc. Reading of selected Middle English texts before Chaucer. Attendance 4 hours, preparation 8, credit 4. Second semester. Miss Pound

201. **Comparative Criticism**—Course 108 continued. Critical appreciation of literature. A reading knowledge of French is indispensable. Admission by consent of the instructor. Credit three hours. First semester. Mr. Frye

202. **Comparative Criticism**—Course 201 continued. Second semester.

203. **Seminary in Criticism**—Credit two hours. First semester.
Mr. Sherman

204. **Seminary in Present Literary Forms and Tendencies**—Credit two hours. Second semester. Mr. Sherman

214. **Chaucer**—Literary and linguistic studies. Informal lectures on contemporary fourteenth century life and literature. Credit two hours. Second semester. Miss Pound

215. **Celtic Sentiment and Thought in Its Relation to English Literature**—A survey of early Irish and Welsh literature with special study of the Arthurian sources. Admission on consent of the instructor. Credit two hours. First semester. Mr. Stuff

216. **Celtic Sentiment**—Course 215 continued. Second semester.

217. **The Bibliography and Methods of Literary History**—Credit two hours. Mr. Scott

221. **Advanced Old English**—Open to students who have a working knowledge of the language. The special mode of study varies according to the needs or equipment of the class. Serves often as an introduction to comparative Teutonic philology. Outline of general

phonetics included if necessary. Preceding or accompanying study of Gothic and Old High German recommended. Credit two hours. First semester.

222. **Advanced Old English**—Course 221 continued. Second semester.

223. **Early Irish: Grammar**—Interpretation of Old and Middle Irish texts. Credit three hours. First semester. Mr. Scott

224. **Early Irish: Grammar**—Course 223 continued. Second semester.

ENTOMOLOGY

Professors Swenk *(Chairman)*, Bruner, Assistant Professor Dawson

The department maintains a laboratory fully equipped for the use of students engaged in research work along systematic lines, and a modern insectary well provided with apparatus useful in facilitating research in economic entomology for those investigating the life-histories of insects. A reference collection of insects numbering approximately 300,000 pinned specimens is available for study by advanced students. It is particularly rich in Hymenoptera, Diptera and Orthoptera, and contains many specimens of these orders named by specialists, including a considerable number of their types. While the greater portion of the collection is representative of our state and national fauna, it is also exceedingly rich in exotic material from Argentina, Costa Rica, Mexico and the Philippine Islands. The library contains practically complete files of all the American and the principal foreign entomological periodicals as well as most of the special monographs in the various orders, and is readily accessible to advanced students, while the economic libraries of the State Entomologist and Nebraska Experiment Station are close at hand and available for reference. The results of studies carried on in the department are issued consecutively in a numbered series.

COURSES

(These courses may be registered for repeatedly until the completion of the problem.)

15. **Research in Systematic Entomology**—Independent studies leading to the monographing of some genus, subfamily or family of insects or the detailed study of the insect fauna of Nebraska in one of the larger groups. First semester. Mr. Swenk

16. **Research in Systematic Entomology**—Course 15 continued. Second semester.

17. **Research in Economic Entomology**—Individual investigation of some special problem in economic entomology, usually the monographing of a species or group of species of economic importance. First semester. Mr. Swenk

18. **Research in Economic Entomology**—Course 17 continued. Second semester.

GEOLOGY AND GEOGRAPHY

Professors Barbour *(Chairman)*, Bengtson, Schramm, Associate Professor Webster

The courses in this department are wholly elective. Courses leading to advanced degrees are arranged, on consultation, to meet the needs of candidates.

HISTORY

Professors Jones *(Chairman)*, Caldwell, Fling, Associate Professor Pfeiffer, Assistant Professor McFayden

The Degree of Master of Arts—The candidate for a Master's degree in history must have completed an undergraduate's major in this University or its equivalent elsewhere, including two hours of historical research. The degree may be taken in the field of American, English, or European history. An accurate and comprehensive knowledge of the chosen field will be required and a thesis based upon the sources. The thesis may be written under the supervision of any member of the department.

For those desiring a minor in history, courses will be arranged in consultation with the candidate's major adviser.

The Degree of Doctor of Philosophy—The thesis for this degree in English or European history must be based at least in part upon research in European archives.

COURSES

201. **Seminar in Ancient History**—Hours and credit to be arranged. First semester. Mr. McFayden

202. **Seminar in Ancient History**—Course 201 continued. Second semester.

217. **The French Revolution**—The constituent Assembly. Credit one hour. First semester. Mr. Fling

218. **The French Revolution**—Course 217 continued. Second semester.

219. **Seminary on the Constituent Assembly**—Credit one hour. First semester. Mr. Fling

220. **Seminary on the Constituent Assembly**—Course 220 continued. Second semester.

222. **History of the Legislative Assembly**—Credit one hour. Second semester. Miss Pfeiffer

223. **Seminary on the Legislative Assembly, 1791-1792**—Credit one hour. First semester. Miss Pfeiffer

224. **Seminary on the Legislative Assembly**—Course 223 continued. Second semester.

227. **Historical Method**—Lectures on the problems of historical research and construction, accompanied by readings in English, French, and German monographs. Credit one hour. First semester. Mr. Fling

228. **Historical Method**—Course 227 continued. Second semester.

231. **Seminar in English History**—Credit 2 hours. First semester. Mr. Jones

232. **Seminar in English History**—Course 231 continued. Second semester.

241. **Seminar in American History**—For graduate students and those who may be admitted to the course by the instructor. All work is along graduate lines. Credit will vary with the amount and character of the student's work. First semester. Mr. Caldwell

242. **Seminar in American History**—Course 241 continued. Second semester.

243. **Graduate Conference in American History**—Meeting of professors, fellows, scholars, and graduate students in American history for discussion of professional and technical subjects, book reviews, methods, etc. First semester.

244. **Graduate Conference in American History**—Course 243 continued. Second semester.

HOME ECONOMICS

Professor Fedde *(Chairman)*, Associate Professor Harris

Preparation for the graduate courses below must be discussed and determined with instructors before registration is effected.

COURSES

105. **Advanced Problems in Food Study**—Lectures, conferences, library and laboratory work on problems in the preservation and preparation of food. Prerequisites: Bacteriology 101, Chemistry, H. E. 3 and 4. Credit three or four hours.

106. **Dietetics**—Additional reference and conference work with individual problems in the study of actual dietaries and the planning of dietaries to meet various needs. Prerequisite or parallel: Course 6. Credit two to four hours.

118. **Seminar in Home Economics Education**—Prerequisite: Twenty-four hours undergraduate work in Home Economics, Education courses equivalent to requirement for University State Certificate, and successful teaching experience in Home Economics. Entrance by permission. Credit two hours.

HORTICULTURE

Professor Howard *(Chairman)*, Associate Professors Hood, Wiggans

Students desiring graduate instruction in this department should consult the Chairman of the department before registering.

COURSES

7. **Horticultural Problems**—Assigned problems in Horticulture. Experimental work in the laboratory, gardens, greenhouses, or orchards, planning experiments, and keeping records. Hours for consultation. Credit two to five hours. Registration only by permission of instructors. First semester.

Mr. Howard, Mr. Hood, Mr. Wiggans

8. **Horticultural Problems**—Course 7 continued. Second semester.

19. **Packing and Handling Fruit**—A course dealing with problems of packing, storing and marketing fruit, selection of exhibition fruit and fruit judging. Course 15 should precede this course. Attendance 1 hour, laboratory 6, assigned readings and preparation 2, credit 3. First semester. Mr. Wiggans

25. **Principles of Plant Breeding**—An elementary study of the principles underlying plant improvement. Prerequisite: Zoology 141 or 142 or by permission. Credit 2 hours. First semester.

Mr. Howard

27. **Special Methods of Teaching Horticulture**—Adaptation to secondary school conditions. Equipment and supplementary literature. Horticultural problems of the high school agricultural instructor. Prerequisite: Courses 1 and 2. Attendance 2 hours, preparation 4, credit 2. First semester. Mr. Hood

JURISPRUDENCE AND PUBLIC LAW

Professors Hastings *(Chairman)*, Maxey

Master of Arts—Complete courses, or major or minor courses, are arranged upon application.

Master of Laws—A candidate for the degree of Master of Laws must have received the degree of Bachelor of Laws from this University or from some approved law school, must complete an additional year's work of at least 16 hours a week in the College of Law or the Graduate College or both, and must present a suitable thesis embodying the result of original investigation and research. Before such student shall be entitled to the degree he must complete all the courses, elective as well as required offered in the College of Law for the degree of Bachelor of Laws.

COURSES

Jurisprudence

(Courses 101-110 inclusive are carried in the College of Law but may be elected by students in the College of Arts and Sciences.)

101. **History and System of the Common Law**—General survey of the legal system of English-speaking countries; courts, their organization and jurisdiction. Students taking this course should have had English history. Attendance 2 hours, preparation 4, credit 2. First semester.

103. **Roman Law**—History and Institutes. Attendance 2 hours, preparation 4, credit 2. First semester.

104. **Analytical and Historical Jurisprudence**—Introduction to legal theory. Attendance 3 hours, preparation 6, credit 3. Second semester.

Public Law and Diplomacy

105. **American Constitutional Law**—Cases on constitutional law. Students taking this course should have had American history. Attendance 3 hours, preparation 6, credit 3. First semester.

106. **American Constitutional Law**—Course 105 continued. Attendance 2 hours, preparation 4, credit 2. Second semester.

107. **Law of Public Officers**—Extraordinary legal remedies. Attendance 2 hours, preparation 4, credit 2. First semester.

108. **Taxation**—Attendance 2 hours, preparation 4, credit 2. Second semester.

109. **International Law I**—Attendance 3 hours, preparation 6, credit 3. First semester.

110. **International Law II**—Advanced course. Specific problems of international law. For students who do not count International Law I. Attendance 2 hours, preparation 4, credit 2. Second semester. *(Not given in 1920-1921.)*

111. **European Diplomacy**—Attendance 2 hours, preparation 4, credit 2. First semester. *(Not given in 1920-1921.)*

113. **Comparative Constitutional and Administrative Law**—Comparative study of public law of the United States, England, Canada, and Australia. Attendance 2 hours, preparation 4, credit 2. First semester.

114. **American Diplomacy**—Organization. Main diplomatic controversies. Attendance 2 hours, preparation 4, credit 2. Second semester. *(Not given in 1920-1921.)*

116. **Seminary on Consular Service**—Admission upon consent of the instructor. Attendance 2 hours, preparation 4, credit 2. Second semester.

MATHEMATICS

Professors Candy *(Chairman)*, Engberg, Brenke, Associate Professor Gaba, Assistant Professor Pierce

Prerequisite—The courses constituting the major in Mathematics are prerequisite for all graduate work.

Master of Arts—Candidates for the degree of A.M., who major in Mathematics must complete 30 hours beyond that constituting the major and present a thesis equivalent to not less than 6 credit hours; at least 18 hours must be in Mathematics, and the rest in Physics, Astronomy, or Philosophy.

Doctor of Philosophy—The candidate must have an extended general knowledge of mathematics and must devote special attention to some line of modern research. A reading knowledge of two foreign languages is required. The results of his work are discussed in the seminar and finally embodied in a thesis.

Seminar—The instructors and advanced students meet twice a month for the discussion of current literature and the presentation of the results of research.

COURSES

111. **Advanced Analytical Geometry**—Prerequisite: Course 4 or 16. Attendance 3 hours, preparation 6, credit 3. First semester.

Mr. Candy

112. **Advanced Analytical Geometry**—Course 111 continued. Second semester.

113. **Projective Geometry**—Prerequisite: Course 2 or 13. Attendance 2 or 3 hours, preparation 4 or 6, credit 2 or 3. First semester.

Mr. Gaba

121. **Higher Algebra**—Prerequisite: Courses 2 or 13, and 21. Attendance 2 hours, preparation 4, credit 2. First semester.

Mr. Pierce

122. **Higher Algebra**—Course 121 continued. Second semester.

123. **Theory of Equations**—Prerequisite: Courses 15 and 21. Attendance 2 hours, preparation 4, credit 2. Mr. Gaba

145. **Studies in Correlation**—Prerequisite: Course 144. Attendance 1 to 3 hours, preparation 2 to 6, credit 1 to 3. First semester. Mr. Engberg

146. **Studies in Correlation**—Course 145 continued. Second semester.

151. **Theory of Series**—Prerequisite: Course 4 or 16. Attendance 3 hours, preparation 6, credit 3. Mr. Brenke

202. **Lie Theory**—Credit two or three hours. Mr. Gaba

211. **Number Theory**—Credit two or three hours. Mr. Pierce

221. **Functions of a Complex Variable**—Credit three hours. Mr. Brenke

251. **Partial Differential Equations**—Credit two hours. Mr. Brenke

253. **Harmonic Analysis**—Credit three hours. Mr. Brenke

261. **Differential Geometry**—Credit three hours. Mr. Pierce

271. **Theory of Aggregates**—Credit two or three hours. Mr. Gaba

282. **Vector Analysis**—Credit two or three hours. Mr. Gaba

283. **Integral Equations**—Credit two or three hours. Mr. Brenke

291. **Reading Courses**—Studies of selected topics under the direction of members of the department.

MECHANICAL ENGINEERING

Professors DeBaufre *(Chairman)*, Associate Professor Haney, Assistant Professors Luebs, Bunting, Mr. Sjogren, Mr. Ninas

COURSES

107. **Machine Shop Methods**—Designing and making tools, dies, jigs and fixtures; preparation of operation and instruction sheets for quantity production under improved methods; study of wage payment systems. Prerequisite: Course 4. Lecture 1 hour, drawing and laboratory 8, credit 3. First and second semesters. Mr. Sjogren

108. **Machine Shop Management**—Management and operation of machine shops under modern production methods, including routing, time studies, inspection, etc.; advanced machine tool practice. Prerequisite: Course 4. Lecture 1 hour, laboratory 8, credit 3. First and second semesters. Mr. Sjogren

109. **Heat and Power**—Sources of heat and power; steam boilers, engines, turbines and their auxiliaries; gas producers; internal combustion engines; hydraulic motors; calibration of instruments and economy tests. Prerequisites: Mathematics 4, Chemistry 4 and Physics 4. Recitations and lectures 5 hours, laboratory 8, preparation 8, credit 7. First semester. Mr. Haney, Mr. Luebs

110. **Heat and Power**—Course 109 somewhat abbreviated and with laboratory omitted. For Civil and Architectural Engineering students. Prerequisites: Mathematics 4, Chemistry 4, and Physics 4. Recitations and lectures 4 hours, preparation 8, credit 4. Second semester. Mr. Luebs

112. **Heat and Power**—For non-engineering students. Descriptions, principles of operation, advantages and disadvantages of various types of steam boilers, engines and turbines, gas producers, internal combustion engines, etc. Prerequisites: Mathematics 16, Chemistry 4, and Physics 12. Recitations and lectures 2 hours, preparation 4, credit 2. Second semester. Mr. Haney

114. **Thermodynamics**—Applications to heaters, coolers, evaporators, condensers, pumps, compressors, ejectors, gas producers, engines, turbines and refrigeration machinery; combustion of fuels; friction and lubrication. Prerequisite: Course 109. Recitations and lectures 4 hours, laboratory 8, preparation 6, credit 6. Second semester. Mr. DeBaufre

115. **Fuel and Lubricant Testing**—Heating value determinations and proximate analyses of coals; measurement of viscosity, fire point, flash point, etc., of oils; theories of combustion and of lubrication. Prerequisites: Mathematics 16, Chemistry 4 and Physics 12. Laboratory 6 hours, credit 2. First semester. Mr. DeBaufre

116. **Experimental Hydraulics**—Determination of coefficients of flow of water through pipes, orifices, nozzles and venturi tubes, and over weirs; calibration of instruments; measurements of power and efficiency of pumps and water motors. Prerequisite: C.E. 101 or 111. Laboratory 6 hours, credit 2. Second semester. Mr. Luebs

117. **Heating, Ventilation and Refrigeration**—Theory, design and tests; methods of heating buildings; temperature and humidity control; cold storage and ice manufacture; heat transmission through building and insulating materials. Prerequisite: Course 109. Recitations and lectures 3 hours, design or testing 4, preparation 5, credit 4. First semester. Mr. Luebs

118. **Building Sanitation**—Systems for water and gas supply, drainage, sewage and waste disposal for city and country homes, office buildings and factories; food storage; sanitary survey and inspection of

private and public property. Recitations and lectures 2 hours, preparation 4, credit 2. Second semester. Mr. Luebs

119. **Steam Boilers and Turbines**—Theory, design, operation and tests, including the study of the effects of pressure, superheat and vacuum upon the economy and capacity; A.S.M.E. boiler code. Prerequisite: Course 114. Recitations and lectures 3 hours, laboratory 4, preparation 5, credit 4. First semester. Mr. Haney

120. **Power Plants**—Designs and specifications for steam, internal combustion engine and hydraulic power plants; experimental analyses of performance; a complete power plant is laid out and estimates made of cost. Prerequisite: Course 114. Design and testing 12 hours, credit 4. Second semester. Mr. Haney

122. **Internal Combustion Engines**—Theory, design, operation and tests of gas, gasoline, kerosene and crude oil engines, of automobile, aeroplane and motor-boat engines, of marine and stationary power plant engines, and of gas producers. Prerequisite: Course 114. Recitations and lectures 3 hours, laboratory 4, preparation 5, credit 4. Second semester. Mr. Haney

124. **Pumps, Compressors and Blowers**—Theory of design and operation of reciprocating and rotary pumps, of piston and centrifugal compressors, and of fans and blowers. Prerequisite: Course 109. Recitations and lectures 2 hours, preparation 4, credit 2. Second semester. Mr. DeBaufre

125. **Heat and Power Laboratory**—Calibration of instruments for measuring pressure, temperature, weight, volume, heat and power; experimental determinations of steam quality; gas analysis; valve setting; economy tests of boilers, engines, etc. Prerequisite: Course 110. Lecture 1 hour, laboratory 8, credit 3. First semester.
Mr. Haney, Mr. Luebs

126. **Thermodynamic Laboratory**—Experimental investigations of the performance of heaters, coolers, evaporators, condensers, engines, refrigeration apparatus, etc., as affected by a particular variable; fuel and lubricant testing. Prerequisite: Recitations and lectures in 114. Lecture 1 hour, laboratory 8, credit 3. Second semester.
Mr. DeBaufre

130. **Metallography**—Heat treatment of iron and non-ferrous alloys, and the effects of manufacturing operations upon the metallographic structure. Prerequisites:Courses 3 and 4, Chemistry 4 and Physics 4. Attendance 1 hour, laboratory 3, preparation 2, credit 2. Second semester.

131. **Metallurgy of Iron**—Iron and its alloys with carbon; special steels; production of cast iron and of malleable castings; advanced study of the cupola; metallography of steel and its heat treatment.

Prerequisites: Courses 3 and 130. Recitations and lectures 3 hours, laboratory 4, preparation 5, credit 4. First semester.

132. **Metallurgy of Non-ferrous Metals**—Copper, tin, zinc, lead, aluminum, etc., and their alloys, with special reference to the manufacturing operations of casting and working; metallography of non-ferrous alloys. Prerequisite: Course 131. Recitations and lectures 3 hours, laboratory 4, preparation 5, credit 4. Second semester.

135. **Factory Engineering and Management**—Inventions, patents, research, development and production; location and construction of factories; purchasing and storing materials; hoisting and conveying machinery; equipment; power transmission; organization; handling men. Prerequisites: Courses 107 and 108. Recitations and lectures 4 hours, preparation 8, credit 4. First semester. Mr. DeBaufre

137. **Factory Processes and Operations**—For non-engineering students. Descriptive course illustrating and describing the various operations and processes used to produce manufactured articles. Prerequisite: Mathematics 16, Chemistry 4 and Physics 12. Recitations and lectures 2 hours, preparation 4, credit 2. First semester.
Mr. DeBaufre

150. **Thesis**—For seniors, on approval. Credit three to five hours.

251. **Laboratory Investigations**—Special investigations and reports relating to steam boilers, steam engines and turbines, internal combustion engines, heating and ventilating, refrigeration, hydraulic machinery, heat transmission, etc.
Mr. DeBaufre, Mr. Haney, Mr. Luebs

252. **Laboratory Investigations**—Course 251 continued.

255. **Advanced Design**—Advanced study of design of steam boilers, steam engines and turbines, internal combustion engines, heating and ventilating apparatus, refrigeration machinery, hydraulic machinery, heat transmission apparatus, etc.
Mr. DeBaufre, Mr. Haney, Mr. Luebs

256. **Advanced Design**—Course 255 continued.

261. **Advanced Thermodynamics**—Advanced study of the theory and applications of thermodynamics. Mr. DeBaufre

262. **Advanced Thermodynamics**—Course 261 continued.

265. **Industrial Engineering**—Study of a particular industry with reference to location, buildings, heating and ventilating, power and lighting, equipment, sources of raw materials, processes and organizations. Mr. DeBaufre

266. **Industrial Engineering**—Course 265 continued.

300. **Graduate Thesis.**

MODERN LANGUAGES

Professors Conklin *(Chairman)*, Fossler, Warshaw, Vaughan

An A.B. or equivalent with a major in a Modern Language is prerequisite to graduate courses. In addition to the thesis the work for the degree of Master of Arts consists of a minimum of 24 hours, of which a part may be chosen from the Senior Division.

COURSES

French

221. **Old French**—Chansons de Gestes, chronicles and lyrics. Credit two hours. First semester. Miss Conklin

222. **Old French**—Course 221 continued. Second semester.

223. **French Philology**—Historical French grammar, phonetical analysis of French words. Credit one hour. First semester. Miss Conklin

224. **French Philology**—Course 223 continued. Second semester.

225. **General Romance Philology**—A comparative study of the development of the various Romance Languages including Rumanian, Italian, French, Provencal, Spanish, Catalan, and Portuguese. This course presupposes a knowledge of Latin, Old French, German and advanced study in at least two Romance Languages. Credit two hours. First semester. Mr. Vaughan

226. **General Romance Philology**—Course 225 continued. Second semester.

German

283. **Gothic**—Grammar and readings. The language, with respect to its phonology, etymological connections and inflectional system; its relation to the other Germanic dialects. Credit three hours. First semester. Mr. Fossler

284. **Principles of Linguistic History**—Work is based principally upon Diekoff's *The German Language* and Behagel's *Die deutsche Sprache*. Credit two hours. Second semester. Mr. Fossler

285. **Comparative Germanic Philology**—Fundamental principles of linguistic science, with special reference to the prehistoric relationship, and historical development and differentiation of English and German. Credit three hours. First semester. Mr. Fossler

Italian

143. **Modern Authors and the Cinquecento**—Readings from such writers as Goldoni, Fogazzaro, Verga, Macchiavelli, Ariosto, Tasso. Prerequisite: Course 142. Credit three hours. First semester. Mr. Vaughan

144. **Dante**—The *Vita Nuova* and the *Divine Comedy*. Prerequisite: Course 143. Credit three hours. Second semester.
Mr. Vaughan

Spanish

265. **Seminary in Spanish**—Intensive study of some noteworthy man of letters, like Lope de Vega, or of some special period in Spanish literature. Conferences, discussions, reports. Credit two hours. First and second semesters. Mr. Warshaw

PHARMACY

Professors Lyman *(Chairman)*, Schneider

Graduate work in pharmacy, pharmacognosy, and pharmaceutical microbiology is open to those students who have completed the elementary courses described in these subjects in the bulletin of the College of Pharmacy, and who have had sufficient training in the related branches and in the languages. Work leading to the degrees of Master of Arts and Doctor of Philosophy must be of such a type as to merit publication in the standard journals. The time necessary in each case is that required by the graduate college. Candidates will consult the research instructors under whom the work is to be done, before registering.

COURSES

201. **Drug Plant Culture**—Seed germination and seed treatment tests. The root symbionts of the more important medicinal plants. Selective propagation. Developing the active constituents of medicinal plants. Climatological factors. Special fertilizers.
Dr. Schneider

202. **Commercial Pharmacognosy**—The commercial sources of crude drugs. The law of supply and demand. Competition. Adulteration of drugs. Protective tariff vs. free trade. Quality and purity of drugs. Dr. Schneider

203. **Microanalytical Methods**—A critical study and comparison of the methods in use, qualitative as well as quantitative, as a preliminary to the development of one or more of the methods, or the formulation of a new or substitute method. Dr. Schneider

204. **Standardization of Disinfectants**—A critical study of the methods now in use with a view to the formulation of a simplified substitute method. Dr. Schneider

205. **Problems in Pharmaceutical Sanitation**—Drug store sanitation. Soda fountain sanitation. Microbial contaminants of pharmaceuticals. Prescription counter sanitation. Sanitation powders, dusting powders, etc. Dr. Schneider

206. **Microanalytical Methods in Toxicology**—The relationship of the microanalytical and chemical methods in toxicology. The equipment and the laboratory and field methods. Assignment and investigation of special problems. Dr. Schneider

PHILOSOPHY

Professors Alexander *(Chairman)*, Hinman, Hyde

Master of Arts—The earning of a Master of Arts' degree in Philosophy normally represents at least three semesters of resident study. Work counting toward this degree may be chosen from any of the courses offered by the Department in the Senior Division or in the Graduate College. From twenty to forty per cent of the necessary credits may be earned by thesis.

Doctor of Philosophy—The earning of the degree of Doctor of Philosophy in Philosophy normally represents at least six semesters of study, not less than two of which must be at the University of Nebraska, in residence. The work, including the choice of a Minor, must be under the direction of the candidate's adviser. From twenty to forty per cent of the necessary credits may be earned by thesis.

Graduate Minor—A graduate minor in Philosophy should comprise at least twenty-five per cent of the total requirement for the degree sought.

COURSES

201. **History of Psychology**—Review of the history of psychological science. Credits 2 hours. First semester. Miss Hyde

202. **Psychological Literature**—Intensive study of psychological texts, chosen to suit. Credits 2 hours. Second semester. Miss Hyde

230. **Philosophical Themes**—Library work and conference. Prerequisite: Course 130 or equivalent. Credit 1 to 3 hours. Mr. Hinman

251. **Advanced Studies in the History of Philosophy**—Prerequisite: Courses 151, 152. Credit 2 hours. First semester. Mr. Alexander

252. **Advanced Studies in the History of Philosophy**—Course 251 continued. Second semester.

271. **Departmental Seminary**—Papers and discussions, by graduate students meeting with the teaching staff of the department. All candidates majoring in Philosophy are expected to attend not less than eight sessions each semester.

272. **Thesis Conference**—Each candidate for a higher degree is expected to hold conferences as arranged, with the professor under whose supervision the thesis is being prepared. Amount of credit is determined by the department.

PHYSICS

Professors Almy *(Chairman)*, Moore, Marvin, T. T. Smith

Instruction for graduate students is offered in both theoretical and experimental physics. Courses 201, 202, 203, 204 dealing with the basic theory of the science are given in a sequence of four semesters. Other courses, dealing with special topics, will be offered as occasion demands.

The department has excellent equipment for research in certain lines, and experimental research is especially encouraged. For the degree of Master of Arts, at least one full year of graduate work in physics is required; a completed research is highly desirable, though not an absolute requirement. A minor in a related subject (Astronomy, Chemistry, Electrical Engineering, or Mathematics) is usually advisable.

COURSES

201. **Dynamics**—Formal development of the dynamical principles of d'Alembert, Lagrange, Hamilton, and Euler, with applications and an introduction to the theory of relativity. Credit four hours. Alternate years. *(Not offered in 1920-21.)* First semester.
Mr. Marvin

202. **Electro-Magnetic Theory of Light**—Electro-magnetic oscillations and their application to the theory of light. Prerequisites: Major in Physics, Mathematics 4 or 16. Credit four hours. Alternate years. Second semester. Mr. Marvin

203. **Electricity and Magnetism**—The general theory, with applications. Prerequisites: Major in Physics, Mathematics 4 or 16. Credit four hours. Alternate years. First semester. Mr. T. T. Smith

204. **Radiation and the Quantum Theory**—The entropy principle and its application to radiation; the quantum hypothesis and recent developments concerning atomic structure. Credit four hours. Alternate years. *(Not offered in 1920-21.)* Second semester. Mr. Almy

211. **Research**—Original investigation of a problem in experimental Physics. No time limitation imposed, but not less than fifteen hours per week is advisable.
Mr. Almy, Mr. Marvin, Mr. Moore, Mr. Smith

Physics Colloquium—Instructors and graduate students meet weekly for the presentation of reports upon the progress of their investigations, and reviews of the current periodicals.

PHYSIOLOGY AND PHARMACOLOGY

Professor Lyman *(Chairman)*, Dr. Stevens

Graduate work in physiology and pharmacology is open to those students who have completed courses 1, 2, 114, and 132 or courses representing an equivalent amount of training, and who have had sufficient training in related branches and in the languages. Work leading to the degrees of Master of Arts and Doctor of Philosophy must be research of such a type as to merit publication in the standard journals. The time necessary in each case is that required by the Graduate College. Candidates will consult with the chairman of the department before registering.

COURSES

201. **Problems in Tolerance.** Dr. Lyman

202. **Problems in the Antagonistic and Synesgistic Action of Drugs.** Dr. Lyman

203. **Problems in the Treatment of Poisons.** Dr. Lyman

204. **Problems in the Effect of the Habit-Producing Drugs upon Nutrition.** Dr. Lyman

POLITICAL SCIENCE AND SOCIOLOGY

Professors Howard, Webster, Aylsworth, Associate Professors Senning *(Chairman)*, Williams

The minimum requirement for the degree of Master of Arts is one full year's work or the equivalent of about thirty class hours, including a thesis. The candidate may devote his entire time to the work of the department; or he may divide it between a major and a minor. A minor is the equivalent of nine class hours. The selection of courses is influenced by the character of the thesis.

The minimum requirement for the degree of Doctor of Philosophy is three full years' work, of which about three-fifths, or the equivalent of about sixty class-hours, must be given to the major subject. The remaining two-fifths of the time, or the equivalent of about forty class hours, must be devoted to a first minor or divided equally between two second minors. The particular courses in the major subject are selected with regard to the character of the thesis and with reference to the candidate's aim and preparation. The thesis must be the result of the sustained investigation of the original materials. Minor may be selected according to the needs of the candidate.

COURSES

227. **Seminar in Sociology**—Credit two hours. First semester. Mr. Howard

228. **Seminar in Sociology**—Credit two hours. Second semester. Mrs. Williams

231. **Research Course in Social Anthropology**—Students desiring to undertake special investigation in social anthropology will be guided in the selection of subjects, the use of the appropriate literature, and the preparation of their researches for publication. One hour a week for conference, credit one hour. First semester. Mr. Webster

232. **Research Course in Social Anthropology**—Course 231 continued. Second semester.

251. **Seminar**—Political problems. Credit two hours. First semester. Mr. Aylsworth

252. **Seminar**—Course 251 continued. Second semester.

253. **Seminar—Administrative Problems in Law Enforcement**—Study of methods of administration, of problems involved in enforcing laws relating to the social, economic and political conditions in Nebraska. Credit two hours. First semester. Mr. Senning

254. **Seminar—Administrative Problems in Law Enforcement**—Course 253 continued. Second semester.

255. **Seminar**—International law as applied during the war. Credit two hours. First semester.

256. **Seminar**—Course 255 continued. Second semester.

RURAL ECONOMICS

Professor Filley *(Chairman)*, Associate Professor Rankin

Students wishing to enter the graduate courses below should consult instructor before registration.

COURSES

7. **Farm Management Survey**—Prerequisite: Courses 3 and 4. Field work, tabulation, and analysis of data. Field work may be done during vacation. Admission by consent of the instructor. Credit one to five hours. First semester. Mr. Filley

8. **Farm Management Survey**—Course 7 continued. Second semester.

ZOOLOGY

Professors Wolcott *(Chairman)*, Barker Whitney, Latimer

Graduate students must consult with the chairman of the department in regard to scholarships or fellowships, and also with respect to registration, even tho their work may actually be done under the immediate direction of another member of the staff.

Master of Arts

Candidates for the degree of Master of Arts must have completed two years of undergraduate work in zoology, and one in botany. The usual requirements are as follows:

Minor: An amount of advanced work equivalent to six credit hours, a thesis, and seminar work for one semester.

Major: An amount of advanced work equivalent to twelve credit hours, a thesis, and assigned reading, including seminar work thruout the year.

Complete course: Work equivalent to full time for one year including reading and seminar work, and an acceptable thesis.

Doctor of Philosophy

Preparation the same as for the Master's degree. The requirements are:

Minor: An amount of work approximating that of the complete course for the degree of Master of Arts.

Major: A course of graduate study which shall meet the minimum time requirement of the Graduate College; the preparation of a thesis which shall represent original research, and three years of seminar work.

COURSES

201. **Seminar**—Review of some recent book based on original research, with a study of the literature of the subject presented. Open to advanced students, and required of candidates for advanced degrees. Credit one hour. May be elected more than once. First or second semester. Department Staff

203. **Research**—Lines of investigation open:

A. Morphology of the mites; problems in ecology; investigations on the local fauna. Mr. Wolcott

B. Problems dealing with the parasitic protozoa and worms. Mr. Barker

C. Problems in heredity and sex-determination. Mr. Whitney

D. Morphology of the vertebrate nervous system. Mr. Latimer

GRADUATE STUDENTS IN 1919-1920

Candidates for the Degree of Doctor of Philosophy

Abbott, Roscoe Conklin.....Lincoln
B. Sc. 1910, A. M. 1918, The University of Nebraska
Chemistry

Arenson, Saul Bryan.....Lincoln
Ph. C. 1916, A. M., 1918, The University of Nebraska
Chemistry

Atkins, Mary Elizabeth.....University Place
A. B. 1912, Nebraska Wesleyan University; A. M. 1914, The University of Nebraska
English, Philosophy

Aul, William Eugene Adolphus.....College View
B. Sc. 1897, Battle Creek Normal; A. M. 1912, The University of Nebraska
Education

Brethouwer, Bernard John.....Lincoln
A. B. 1909, Cotner University; A. M. 1916, The University of Nebraska
Philosophy

Burrage, Dwight Grafton.....Crete
A. B. 1897, A. M. 1899, Amherst College
Greek

Byers, Earl Alexander.....Lincoln
A. B. 1916, Midland College; A. M. 1918, The University of Nebraska
Philosophy

Clark, Letta May.....University Place
A. B. 1905, Nebraska Wesleyan University; A. M. 1913, The University of Nebraska
English

Clark, Lucy Agatha Mary.....Chadron
A. B. 1903, The University of Nebraska
History, English

Cochran, LeRoy Edwin.....Lincoln
A. B. 1905, A. M. 1917, The University of Nebraska
History

Goldsmith, Glenn Warren.....Lincoln
A. B. 1911, The University of Minnesota
Botany

Hendricks, B. Clifford.....Lincoln
B. E. 1910, Peru State Normal; B. Sc. 1911, M. S. 1914, Chicago University
Chemistry

Loomis, Alice Marie.....Lincoln
B. Sc. 1904, A. M. 1910, The University of Nebraska
Education

Raub, Leo Gerard.....Lincoln
A. B. 1916, Oberlin College
Physics

Sears, Marjorie Lea.....Lincoln
B. Ph. 1914, Denison College; A. M. 1916, Ohio State University
English

Sorrell, James William.....Omaha
A. B. 1900, A. M. 1903, Gallaudet College
English

Thompson, Theos Jefferson.....Lincoln
A. B. 1913, A. M. 1915, The University of Nebraska
Chemistry

Candidates for the Degree of Master of Arts

Abraham, Arthur Henry.....Fremont
B. Sc. 1917, Coe College
Mechanical Engineering

Adams, Alfred Lester.....Omaha
A. B. 1920, The University of Nebraska
Economics

Allensworth, Mary Helen.....Lincoln
A. B. 1919, The University of Nebraska
History

Anderson, Arthur.....Lincoln
B. Sc. 1916, The University of Nebraska
Horticulture

Anderson, Mary Annette.....Lincoln
A. B. 1915, The University of Nebraska
Education

Babcock, Elizabeth.....Lincoln
A. B. 1919, The University of Nebraska
English, Philosophy

Bailey, Rachael McGee.....College View
A. B. 1914, Union College
Mathematics

Beaumont, Gladys Norton.....Lincoln
B. Sc. 1919, The University of Nebraska
Political Science and Sociology

Bedford, Marguerite Kauffman.....Lincoln
A. B. 1917, The University of Nebraska
English

Benson, Clement.....College View
A. B. 1905, Union College
History

Benson, Elsie Andrews.....College View
A. B. 1904, Union College
English

Bergman, Anna Margaret.....College View
A. B. 1911, Union College
History

Berry, Myrtle Dixie.....Lincoln
A. B. 1919, The University of Nebraska
Political Science

Bigelow, Clarence Ray.....Harrison
A. B. 1917, The University of Nebraska
History

Blakeslee, Thomas Alvara.....Bethany
B. Ph. 1916, University of Chicago
Economics

Botkin, Frances Rebecca.....Lincoln
A. B. 1919, The University of Nebraska
Philosophy

Brigance, William Norman.....Pine Ridge, S. D.
A. B. 1916, The University of South Dakota
History

Brownell, Louise Barker.....Lincoln
A. B. 1916, The University of Nebraska
Botany

Burgess, Edith.....Bethany
A. B. 1913, Cotner University
Philosophy

Burrows, Margaret.....Lincoln
A. B. 1914, The University of Nebraska
Education

Callen, Ernest Glenn.....University Place
A. B. 1919, Nebraska Wesleyan University
Political Science

Cameron, Anna Margharetta.....Lincoln
A. B. 1915, The University of Nebraska
Sociology

Clark, Grace Marie.....Lincoln
A. B. 1907, The University of Nebraska
Education

Clark, Orin Ray.....Lincoln
A. B. 1916, The University of Nebraska
Botany

Clayburn, Ansel Bennett.....Monroe
A. B. 1920, The University of Nebraska
Education

Cochran, Winifred Etta Gould.....Lincoln
A. B. 1908, The University of Nebraska
History

Coburn, Dorothy.....Lincoln
A. B. 1919, The University of Nebraska
History

Congdon, Allan Ray.....Lincoln
A. B. 1899, The University of Nebraska
Mathematics

Conner, Paul.....Stratton
A. B. 1910, The University of Nebraska
Economics

Cook, Warren Sanford.....Tecumseh
A. B. 1916, The University of Nebraska
Education

Damsgard, Lincoln.....College View
A. B. 1913, Union College
Philosophy

Davis, Wallace Clyde.....Lincoln
B. Sc. 1887, York College; D. D. S. 1881, Iowa State University
Pathology

Delano, Clarissa.....Lincoln
A. B. 1917, The University of Nebraska
Economics

Duncan, James Floyd.....Bethany
A. B. 1903, The University of Nebraska
Education

Duncombe, Eli.....Lincoln
B. Sc. 1919, The University of Nebraska
Chemistry

Dunn, Theo Somers.....Lincoln
A. B. 1909, The University of Nebraska
Education, Geology

Eaton, Roy Wesley.....Omaha
A. B. 1913, The University of Nebraska
Education

Faris, James Abraham.....Lincoln
B. Sc. 1916, The University of Missouri
Botany

Fosbury, Eva May.....University Place
A. B. 1905, Nebraska Wesleyan University
History

Fowler, Sadie Lenore.....Bellevue
A. B. 1903, The University of Nebraska
English

Gaddis, Porter Lemuel.....Lincoln
A. B. 1908, Greenville College; B. Sc. 1916, The University of Nebraska
Agronomy

Gifford, Sanford R. ..... Omaha
A. B. 1913, Cornell University; M. D. 1918, The University of Nebraska
Bacteriology

Giles, George Herbert ..... Wilsonville
A. B. 1917, The University of Nebraska
Botany

Gillam, Lois ..... Des Moines, Ia.
A. B. 1916, Iowa State University
English

Glenn, Ray Fielding ..... University Place
A. B. 1919, The University of Nebraska
Education

Goodding, Thomas Homer ..... Lincoln
B. Sc. 1916, The University of Nebraska
Agronomy

Goss, Vivian Lee ..... Lincoln
A. B. 1919, The University of Nebraska
American History

Graves, Josephine Estella ..... Falls City
A. B. 1918, The University of Nebraska
Physics

Griesel, August ..... Panora, Iowa
Ph. B. 1914, Sioux Falls College
American History

Herrmann, William Frederick ..... Lancaster, Kansas
A. B. 1908, Midland College
History

Hess, Benjamin True ..... Lincoln
A. B. 1910, The University of Nebraska
History

Hiatt, Lula Blanche ..... Lincoln
A. B. 1902, Union College
Modern Languages

Hitt, Arthur Adolph ..... Alma, Wis.
A. B. 1916, University of Wisconsin
Education

Hofeldt, John Henry ..... Santee
A. B. 1918, The University of Nebraska
Mathematics.

Jansen, Vesta Andreason ..... College View
A. B. 1917, Washington Missionary College
English

Jensen, Anton Henry ..... Lincoln
A. B. 1920, The University of Nebraska
Modern Languages

Johnson, Emma Adaline ..... College View
A. B. 1908, Union College
English

Jones, Milton Foulkes ..... York
A. B. 1913, Grinnell College
Education

Kellogg, Jessie May ..... Red Cloud
A. B. 1906, Washington State University
English

Kendall, Olney Lee ..... University Place
A. B. 1910, The University of Nebraska
History

Leger, Frank Wesley ..... Lincoln
A. B. 1918, Peru State Normal
Botany

Link, John Thomas ..... Seward
A. B. 1919, The University of Nebraska
Geography

Lynch, James Eric.....Lincoln
A. B. 1917, The University of Nebraska
Zoology

McComb, Walter Jay.....College View
B. Sc. 1916, Union College
History

Maryott, Florence Mary.....Lincoln
B. F. A. 1917, The University of Nebraska
English

Melick, Bertha Lucile.....Havelock
A. B. 1910, The University of Nebraska
English

Mesropian, Alice.....Omaha
A. B. 1916, The University of Nebraska
English

Mickel, Clarence Eugene.....Lincoln
B. Sc. 1917, The University of Nebraska
Entomology

Miller, Ann Wilson.....Culbertson
A. B. 1910, The University of Nebraska
History

Neuman, Robert Reinhold.....College View
A. B. 1916, Union College
History

Patridge, Harold Robertson.....North Bend
A. B. 1913, Nebraska Wesleyan University
Education

Patterson, Charles Henry.....Lincoln
A. B. 1917, Washington Missionary College
History

Pickerel, Michael Wayne.....Lincoln
A. B. 1919, Nebraska Wesleyan University
Philosophy

Plumb, Charles Edward.....College View
A. B. 1913, Union College
Chemistry

Poska, Rebecca Ruth.....Lincoln
A. B. 1911, The University of Nebraska
English

Power, Marschelle Harnly.....Fort Morgan, Colo.
A. B. 1917, The University of Nebraska
Chemistry

Rabe, Elizabeth Marie.....Lincoln
A. B. 1915, The University of Nebraska
English

Reimund, Harry Henry.....Lincoln
A. B. 1919, The University of Nebraska
Political Science

Robinson, Ernest Guy.....Lincoln
B. Sc. 1920, Cornell University
Geology

Robey, Blanche Knowlton.....Lincoln
A. B. 1915, The University of Nebraska
English

Rolofson, Pearl.....Lincoln
A. B. 1914, The University of Nebraska
Modern Languages

Ruyle, William Leroy.....Malcolm
A. B. 1912, Nebraska Wesleyan University; S. T. B. 1915, Garrett Biblical Institute
Rural Economics

Saxild, Bronson Sorenson.....College View
A. B. 1915, Pacific Union College
English

Sherer, Charles Robert.....Lincoln
A. B. 1917, The University of Nebraska
Mathematics

Showalter, John Francis.....Lincoln
A. B. 1919, The University of Nebraska
Education

Shultz, John Floid.....Lincoln
B. Sc. 1918, The University of Nebraska
Chemistry

Smith, Harvey Allen.....Beemer
A. B. 1916, Nebraska Wesleyan University
Education

Smullin, George Wesley.....Lincoln
B. Sc. 1917, Iowa State College
Physics

Sohlberg, Helen Adeline.....Lincoln
A. B. 1919, The University of Nebraska
History

Spear, Julia Matilda.....Lincoln
A. B. 1912, The University of Nebraska
Education

Stahl, William.....Lincoln
A. B. 1919, Midland College
Geology

Stilwell, Charles F.....Arapahoe
B. Sc. 1901, Nebraska Wesleyan University
Education

Stockdale, William Tolbert.....Chadron
A. B. 1898, Lincoln Normal
Education

Strain, Tessa Stevens.....Bethany
A. B. 1916, Cotner University
English

Sturmer, Anna Marie.....Jansen
A. B. 1917, The University of Nebraska
English

Taylor, Albion Guilford.....College View
A. B. 1915, Highland Park
Economics

Teeter, Hazel Ferne.....North Bend
A. B. 1912, The University of Nebraska
Romance Languages

Wagner, Ona Ruth.....Ithaca
A. B. 1915, The University of Nebraska
History

Waite, Dorothy Olivia.....Lincoln
A. B. 1915, The University of Nebraska
History

Walsh, Stasia.....Missouri Valley, Ia.
A. B. 1918, The University of Nebraska
English Literature

Weaver, Ernest Levi.....Clarinda, Ia.
A. B. 1905, Nebraska Wesleyan University
Education

Weinberg, Joseph Alexander.....Norfolk
B. Sc. 1917, Omaha University; M. D. 1919, The University of Nebraska
Bacteriology and Pathology

Wehrs, Cecilia Sophie.....Milford
A. B. 1916, The University of Nebraska
English

Wehrs, Lucile Amelia.....Milford
A. B. 1917, The University of Nebraska
Education

Weissmiller, Ralph Robert.....Bendena, Kans.
A. B. 1911, Midland College
History

Wilbur, Eugene Russel.....Lincoln
A. B. 1919, The University of Nebraska
English

Wilcox, Marion Rebecca.....Lincoln
A. B. 1916, The University of Nebraska
Education

Wimberly, Lowry Charles.....Lincoln
A. B. 1916, The University of Nebraska
English

Winter, Martha Bertha.....Norfolk
A. B. 1917, The University of Nebraska
History

Woodard, John Albert.....Lincoln
A. B. 1909, The University of Nebraska
Education

Woodburn, Mary Edith.....Lincoln
A. B. 1917, The University of Nebraska
Education

Zrust, Josephine Lucile.....Clarkson
A. B. 1919, The University of Nebraska
Sociology

Candidates for the Degree of Master of Science

Boehr, John Wesley.....Hastings
B. Sc. 1920, The University of Nebraska
Dairy Husbandry

Palmateer, Russell.....Creston
A. B. 1919, Nebraska Wesleyan University
Chemistry

Candidate for the Degree of Master of Science in Electrical Engineering

Frank, Theodore Ludwig.....Omaha
B. Sc. 1915, The University of Nebraska
Electrical Engineering

Graduate Students Without Reference to Degree

Anderson, Edith Marie.....Lincoln
A. B. 1918, The University of Nebraska

Armstrong, Amy Eleanor.....Syracuse
A. B. 1914, A. M. 1917, The University of Nebraska

Baker, Maddie.....Bethany
A. B. 1918, Cotner University

Berry, Lillian.....Lincoln
A. B. 1919, The University of Nebraska

Beynon, Abi Elizabeth.....Lincoln
A. B. 1917, The University of Nebraska

Bisset, Charles.....York
A. B. 1909, Kansas State University

Boggs, Georgia.....Lincoln
A. B. 1918, The University of Nebraska

Brenneman, Alberta.....Columbus
M. E. 1894, Millersville Normal, Pa.

Brodrick, Hattie Mabel.....College View
A. B. 1912, The University of Nebraska

Brown, Dalrea ..... Stanton
A. B. 1918, Peru Normal

Bullock, Flora ..... Lincoln
A. B. 1897, A. M. 1899, The University of Nebraska

Caldwell, Evelyn Barnes ..... Lincoln
B. F. A. 1919, The University of Nebraska

Cameron, Janet Grey ..... Lincoln
A. B. 1911, The University of Nebraska

Clark, Nellie May ..... Lincoln
A. B. 1895, The University of Nebraska

Clark, Walter Cornelious ..... Bethany
A. B. 1916, Cotner University

Crue, Margaret Gabel ..... Tilden
A. B. 1917, The University of Nebraska

Deal, Roy Walter ..... Davenport
A. B. 1917, Nebraska Wesleyan University

DeMoss, William Penn ..... University Place
Ph. B. 1911, A. M. 1911, Chicago University

Dilworth, Cora Williams ..... Lincoln
A. B. 1916, The University of Nebraska

Dworak, Mayme ..... Lincoln
A. B. 1909, A. M. 1914, The University of Nebraska

Ellis, Dale ..... Bethany
A. B. 1916, Cotner University

Erickson, Blanche ..... Lincoln
B. Sc. 1914, Ottawa University

Filley, Horace Clyde ..... Lincoln
A. B. 1903, A. M. 1911, The University of Nebraska

Firth, Martha ..... Grand Island
Ph. B. 1893, Central University

Fleming, Helen Davison ..... Lincoln
A. B. 1916, The University of Nebraska

Folda, Lamar ..... Crete
B. Sc. 1919, The University of Nebraska

Fuchs, Gustave Otto ..... Stanton
A. B. 1912, The University of Nebraska

Good, Lula Katherine ..... University Place
A. B. 1913, Nebraska Wesleyan University

Greene, Sarah Virginia ..... Lincoln
A. B. 1906, The University of Nebraska

Heard, Clyde Harmon ..... Lincoln
B. Sc. 1910, M. Sc. 1912, University of Idaho

Hedrick, Orville Lee ..... Pawnee City
B. Sc. 1917, The University of Nebraska

Hewitt, Lucy Rockwood ..... Lincoln
A. B. 1909, The University of Nebraska

Hilscher, Harris Gregg ..... Lincoln
A. B. 1919, College of Emporia

Hooker, Amy Sophia ..... Adams
A. B. 1915, Nebraska Wesleyan University

Hoppel, Gilbert Sage ..... Bayard
B. Sc. 1911, A. B. 1915, Fremont Normal

Houmark, Willie Jensen ..... Minden
A. B. 1916, The University of Nebraska

Hunt, Ira Jasper ..... Lincoln
A. B. 1896, A. M. 1901, The University of Nebraska

Huntington, Harry Flickinger ..... Lincoln
B. Sc. 1903, Nebraska Wesleyan University

Husman, Ernest Henry ..... Lincoln
A. B. 1917, The University of Nebraska

Jones, Orville Leroy ..... Lincoln
LL. B. 1913, The University of Nebraska

Kelly, Mabel ..... University Place
A. B. 1916, The University of Nebraska

Kelsey, Catherine Marian.....Lincoln
A. B. 1918, The University of Nebraska
Kenner, James Rupert.....Utica
B. Sc. 1917, The University of Nebraska
Kirk, Raymond E.....Lincoln
B. Sc. 1915, M. Sc. 1917, Iowa State College
Kittinger, Mary Alice.....Lincoln
A. B. 1915, The University of Nebraska
Lambert, Raymond Henry.....Lincoln
B. Sc. 1918, The University of Nebraska
Lill, Faye Hartley.....Lincoln
A. B. 1910, The University of Nebraska
Linton, Clarence.....Lyons
A. B. 1919, Wayne Normal
McClelland, Anna Mabel.....Fullerton
A. B. 1908, Bellevue College
Madsen, Emma.....Lincoln
B. Sc. 1907, Iowa State College
Martin, Harry Mathias.....Lincoln
V. M. D. 1916, University of Pennsylvania
Mathewson, Louise.....Lincoln
A. B. 1915, A. M. 1919, The University of Nebraska
Menke, Minnie.....Crete
B. Sc. 1918, The University of Nebraska
Miller, Louise.....Lincoln
A. B. 1903, A. M. 1905, The University of Nebraska
Minteer, Claude Clinton.....Lincoln
B. Sc. 1916, Iowa State College
Modlin, Jessie Fern.....Beaver City
A. B. 1917, Peru Normal
Mortenson, Bess Potter.....University Place
A. B. 1915, Doane College
Mortenson, Morten Lambert.....University Place
A. B. 1914, Doane College
Muir, Sarah Theodosia.....Lincoln
A. B. 1900, A. M. 1906, The University of Nebraska
Parker, Jesse Leroy.....Lincoln
A. B. 1901, Graceland College
Phillips, Eva Fern.....Beatrice
A. B. 1911, Bellevue College
Pickering, Lois.....Steele City
A. B. 1916, Park College
Piper, Jennie Louise.....Lincoln
A. B. 1904, A. M. 1911, The University of Nebraska
Premer, Chauncy Lloyd.....College View
A. M. 1918, The University of Nebraska
Putney, Cornelia Frazier.....Lincoln
A. B. 1916, The University of Nebraska
Roberts, Genevieve Moore.....Lincoln
A. B. 1918, The University of Nebraska
Rokahr, Elsie Katherine.....Lincoln
A. B. 1910, The University of Nebraska
Rummons, Constance.....Lincoln
A. B. 1916, A. M. 1919, The University of Nebraska
Ryan, Sarah Agnes.....Havelock
A. B. 1893, A. M. 1910, The University of Nebraska
Samuelson, Earl N.....York
B. Sc. 1915, The University of Nebraska
Sands, Lila.....Winter Haven, Fla.
B. Sc. 1919, The University of Nebraska
Schaupp, Zora.....Lincoln
A. B. 1919, The University of Nebraska
Scheldt, John Henry.....Friend
B. Sc. 1917, The University of Nebraska

Scott, Birdie Grace.....Lincoln
A. B. 1906, The University of Nebraska

Scott, Elizabeth Crawford.....Lincoln
A. B. 1917, The University of Nebraska

Scott, Robert Douglas.....Lincoln
B. Sc. 1904, Kansas Agricultural College; A. M. 1910, The University of Nebraska

Shannon, Jetta Lloyd.....Lincoln
B. Sc. 1908, Southwestern University

Silver, Myra Esther.....Omaha
A. B. 1916, The University of Nebraska

Simpson, Merle Mae.....Fairbury
A. B. 1915, The University of Nebraska

Slavens, Gladys M.....Ellis
A. B. 1916, Doane College

Smith, Chauncey William.....Lincoln
B. Sc. 1914, The University of Nebraska

Smith, Elizabeth Newell.....Lincoln
A. B. 1909, B. Sc. 1910, University of Missouri

Smith, Harold Thaddeus.....Crete
A. B. 1918, Doane College

Spaulding, Ernest Miles.....Alexandria
A. B. 1918, Peru State Normal

Steckelberg, Emma Charlotte.....Plymouth
A. B. 1909, The University of Nebraska

Stevens, Charles Franklin.....Bethany
A. B. 1896, Central Christian College

Stough, Howard Brown.....Chadron
A. B. 1907, Midland College; A. M. 1909, Kansas University

Stuff, Freda.....Lincoln
A. B. 1915, The University of Nebraska

Torrence, Julia.....Lincoln
A. B. 1918, The University of Nebraska

Voegelein, L. Belle.....University Place
A. B. 1912, Northwestern College; A. M. 1913, University of Illinois

Vohland, Michael Lewis.....Gibbon
A. B. 1913, University of Michigan

Wallace, Dorothy E.....Lincoln
A. B. 1917, The University of Nebraska

Watson, Curry Watham.....Lincoln
B. Sc. 1916, A. M. 1917, The University of Nebraska

Weseen, Maurice Harley.....Lincoln
A. B. 1914, A. M. 1917, The University of Nebraska

Whelpton, Pascal Kidder.....Lincoln
B. Sc. 1915, Cornell University

Williams, Henry.....Rembrandt, Iowa
B. Sc. 1913, A. B. 1915, Fremont College

Wilson, Ida Gillette.....Lincoln
A. B. 1916, The University of Nebraska

Witte, Edward Lewis.....Sterling
A. B. 1908, The University of Nebraska

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1922/23

UNIVERSITY OF ILLINOIS

SERIES XXVII No. 10

Bulletin of The University of Nebraska

ANNUAL CATALOG

OF THE

GRADUATE COLLEGE

ANNOUNCEMENTS
1922-23

Published by the University April 10, 1922

LINCOLN, NEBRASKA

The Bulletin of the University of Nebraska is published monthly in September and November, semi-monthly in May, tri-monthly in February, weekly in March and semi-weekly in April of each year by the University of Nebraska. Entered at the Post-Office at Lincoln, Nebraska, as second-class matter under Act of Congress, July 16, 1894.

Acceptance for mailing at special rate postage provided for in Section 1103, Act of October 3, 1917, authorized July 18, 1918.

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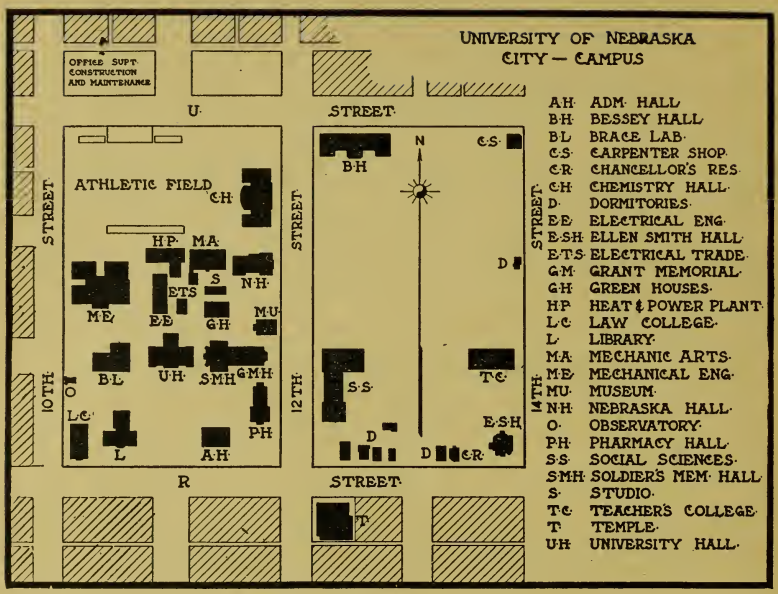
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BL BRACE LAB.
CS CARPENTER SHOP
CR CHANCELLOR'S RES.
CH CHEMISTRY HALL
D DORMITORIES
EE ELECTRICAL ENG.
ESH ELLEN SMITH HALL
ETS ELECTRICAL TRADE
GM GRANT MEMORIAL
GH GREEN HOUSES
HP HEAT & POWER PLANT
LC LAW COLLEGE
L LIBRARY
MA MECHANIC ARTS
ME MECHANICAL ENG.
MU MUSEUM
NH NEBRASKA HALL
O OBSERVATORY
PH PHARMACY HALL
SS SOCIAL SCIENCES
SMH SOLDIER'S MEM. HALL
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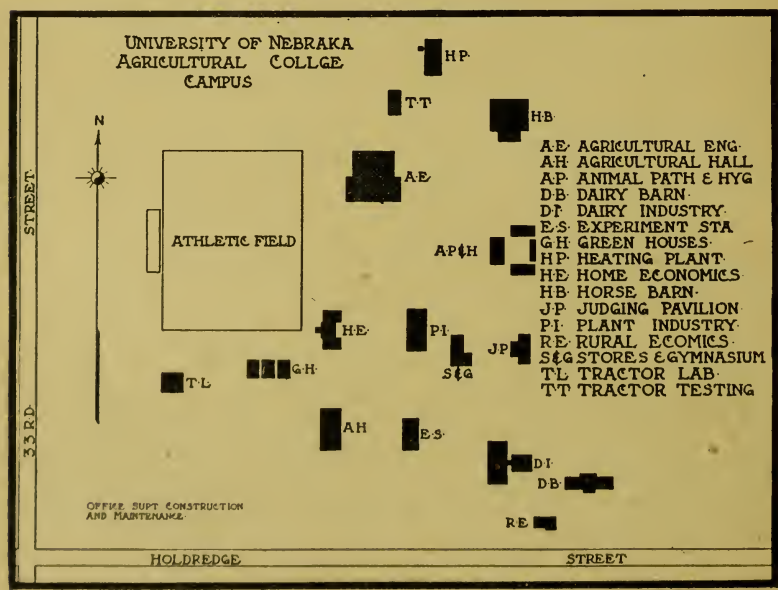
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AE AGRICULTURAL ENG.
AH AGRICULTURAL HALL
AP ANIMAL PATH & HYG
DB DAIRY BARN
DI DAIRY INDUSTRY
ES EXPERIMENT STA
GH GREEN HOUSES
HP HEATING PLANT
HE HOME ECONOMICS
HB HORSE BARN
JP JUDGING PAVILION
PI PLANT INDUSTRY
RE RURAL ECOMICS
S&G STORES & GYMNASIUM
TL TRACTOR LAB.
TT TRACTOR TESTING

CALENDAR FOR 1922-23 OF ALL COLLEGES AND SCHOOLS

1922

September 8-13	Friday-Wednesday	Entrance examinations
September 8-13	Friday-Wednesday	Registration, first semester
September 14	Thursday	First semester classes begin
September 16	Saturday, 8 p. m.	University reception to all students
September 19	Tuesday, 11 a. m.	Opening address by the Chancellor
October 9	Monday	School of Agriculture, first semester begins
October 14	Saturday	First-quarter reports
November 11	Saturday	Mid-semester reports
November 30	Thursday	Thanksgiving holiday
December 9	Saturday	Third-quarter reports
December 22	Friday, 6 p. m.	Christmas recess begins

1923

January 3	Wednesday, 8 a. m.	Christmas recess ends
January 3-11	Wednesday-Thursday	Registration, second semester, for resident students
January 13-20	Saturday-Saturday	First semester examinations
January 15	Monday	School of Agriculture, second semester begins
January 17-20	Wednesday-Saturday	Registration, second semester, for new students
January 22	Monday	Second semester classes begin
February 14	Wednesday	Phi Beta Kappa and Sigma Xi address
February 17	Saturday	First-quarter reports
March 17	Saturday	Mid-semester reports
March 24	Saturday, 12 m.	Spring recess begins
April 3	Tuesday, 8 a. m.	Spring recess ends
April 13	Friday	School of Agriculture Commencement
April 21	Saturday	Third-quarter reports
May 25-31	Friday-Thursday	Second semester examinations
May 31	Thursday	Teachers College High School Commencement

Commencement Week

May 31-June 2	Thursday-Saturday	Ivy Day. Alumni Day. Class Day
June 3	Sunday	Baccalaureate Sermon
June 4	Monday	Fifty-second Annual Commencement

Summer Session, 1923

June 2	Saturday	Registration, Summer Session
June 5	Tuesday	Summer Session classes begin
July 10-11	Tuesday-Wednesday	Registration, second term
July 11	Wednesday	First term closes
July 12	Thursday	Second term classes begin
August 17	Friday	Summer session closes

1923-24

September 7	Friday	First semester begins

THE UNIVERSITY

Colleges and Schools of the University. The University of Nebraska comprises the following colleges and schools:

The Graduate College.
The College of Arts and Sciences, including the School of Fine Arts.
The College of Agriculture.
The College of Engineering.
The College of Law.
The Teachers College.
The College of Medicine.
The College of Pharmacy.
The College of Business Administration.
The College of Dentistry.

The Teachers College High School, the School of Agriculture, the Nebraska School of Agriculture at Curtis, the Nebraska Agricultural Experiment Station, the Experimental Substations at North Platte, Valentine and Scottsbluff, the Irrigation School at Scottsbluff, the Agricultural Extension Service, the University Extension Division and the Trades School are also under the supervision of the Board of Regents of the University.

For separate catalogs or information regarding any of the above colleges or schools, address

The REGISTRAR,
The University of Nebraska,
Lincoln, Nebraska.

THE BOARD OF REGENTS

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Hon. Frank Woodhull Judson, Omaha	1925
Hon. John Robinson Webster, Omaha	1925
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OFFICERS OF ADMINISTRATION AND INSTRUCTION

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[1]**Lawrence Bruner**, B.Sc., Professor of Entomology.

Philo Melvin Buck, Jr., A.M., Dean of the College of Arts and Sciences and Professor of English.

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[1]Absent on leave.

William Wesley Burr, B.Sc., Professor of Agronomy and Assistant Director of Experiment Station. *(Chairman of Department.)*

[1]**Howard Walter Caldwell**, A.M., Professor of American History.

Albert Luther Candy, Ph.D., Professor of Mathematics. *(Chairman of Department.)*

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Olin Jerome Ferguson, M.E.E., Dean of the College of Engineering and Professor of Electrical Engineering. *(Chairman of Department.)*

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Sherlock Bronson Gass, Ph.B., Professor of English.

Howard John Gramlich, B.Sc., Professor of Animal Husbandry. *(Chairman of Department.)*

Louis H. Gray, Ph.D., Associate Professor of Philosophy.

Paul Henry Grummann, A.M., Director of the School of Fine Arts and Professor of Dramatic Literature.

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[1]Absent on leave.

August Ernest Guenther, Ph.D., Professor of Physiology and Pharmacology. *(Chairman of Department.) (In the College of Medicine.)*

James William Hendrickson, A.M., Assistant Professor of Dairy Husbandry.

Edgar Lenderson Hinman, Ph.D., Professor of Logic and Metaphysics.

Vernon Leo Hollister, E.E., Associate Professor of Electrical Engineering.

[1]**George Elliott Howard**, Ph.D., Professor of Political and Social Science.

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Elizabeth Irene Reese, A.M., Associate Professor of Romance Languages and Literatures.

Frederick Warren Sanford, A.B., B.S., Associate Professor of Ancient Languages.

William Elmer Sealock, Ph.D., Professor of History and Principles of Education. *(Chairman of Department.)*

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[1]Absent on leave.

John Peter Senning, A.B., Associate Professor of Political and Social Science. *(Chairman of Department.)*

Lucius Adelno Sherman, Ph.D., LL.D., Dean of the Graduate College and Professor of English Language and Literature. *(Chairman of Department of English.)*

Oscar Warner Sjogren, B.Sc., Professor of Agricultural Engineering. *(Chairman of Department.)*

Philip Kuhns Slaymaker, M.E., Professor of Machine Design.

Theodore Townsend Smith, Ph.D., Professor of Experimental Physics.

Frederick Ames Stuff, A.M., Litt.D., Professor of Technique of Instruction in English.

Myron Harmon Swenk, A.M., Professor of Economic Entomology and State Entomologist. *(Chairman of Department of Entomology.)*

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George Olien Virtue, Ph.D., Professor of Economics and Public Finance.

Herbert Harold Waite, A.M., M.D., Professor of Bacteriology and Pathology. *(Chairman of Department.)*

Elda Rema Walker, Ph.D., Associate Professor of Botany.

Leva Belle Walker, A.M., Associate Professor of Botany.

[1]**Charles William Wallace**, Ph.D., Professor of English Dramatic Literature.

Jacob Warshaw, Ph.D., Professor of Modern Languages.

John Ernst Weaver, Ph.D., Professor of Ecology.

Hutton Webster, Ph.D., Professor of Social Anthropology.

David Day Whitney, Ph.D., Professor of Zoology.

William Albert Willard, Ph.D., Professor of Anatomy. *(In the College of Medicine.)*

Hattie Plum Williams, Ph.D., Associate Professor of Practical Sociology.

Robert Henry Wolcott, A.M., M.D., Professor of Zoology. *(Chairman of Department.)*

The Graduate Council

Professors Alexander, Barber, Barker, Brenke, Chatburn, Fossler, Upson, Williams.

Committee on Requirements for the Graduate Teachers Diploma: Professors Fordyce, Hyde, Reed, Sealock, Stuff.

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[1]Absent on leave.

THE GRADUATE COLLEGE

(Confers the degree of Doctor of Philosophy, Master of Arts, Master of Science, Master of Agricultural, Civil, Electrical and Mechanical Engineering.)

History of the Graduate College—Graduate instruction in the University of Nebraska was organized in 1886. In 1895 a Graduate School was organized, under a Dean and a designated faculty. In 1909, the charter of the University was amended, and the establishment of seven colleges, instead of the five colleges named in the charter, was authorized. By this act the Graduate School became the Graduate College of the University of Nebraska.

Purpose of the Graduate College—The Graduate College extends and enlarges the work of the undergraduate departments and provides facilities for specialization and research. It furnishes adequate preparation for those who expect to become investigators, professional engineers or teachers in academies and colleges. The Graduate College offers opportunities, which would be costly in an institution differently endowed, at a minimum expense to the student.

Admission to the Graduate College

The Graduate College recognizes two classes of applicants: (1) those who are eligible to candidacy for higher degrees and wish to enter at once upon their special work; (2) those who, having taken a bachelor's degree, wish to broaden their education, without reference to higher degrees. Candidates seeking advanced degrees, with insufficient preparation, are admitted to graduate standing but are required to make up their deficiencies by taking courses in the undergraduate colleges.

Graduates of the colleges of this University, or of other institutions having equivalent courses, and who have been accepted and approved by the chairmen of the departments in charge of the subjects desired are registered by the Dean of the college for the degree they wish to secure. For the degree of Doctor of Philosophy, the candidate must take a major subject and an approved minor, or a major subject and two approved minors. Candidates for the degree of Master of Arts register for a major subject, or a major and a minor, or a major and two minors.

Fees

The usual laboratory fees are required of students taking work in any science or engineering department. But a student who is unable to devote his entire time to University graduate work may,

on recommendation of the Graduate Council, be permitted to register free of charge after he has paid the incidental fee for four semesters, if a candidate for the degree of Master of Arts; or for eight semesters, if a candidate for the degree of Doctor of Philosophy.

Medical Advice and Service

The University maintains a department of medical advice and any student needing this should report at once to the physician in charge. The medical dispensary is located in the building of the College of Pharmacy. Medical advice and dispensary service are free to all students of the University; drugs and medical supplies are furnished at cost. Inasmuch as this service is maintained without profit, but solely for the benefit of the students, the University cannot be held responsible for unforeseen or unexpected results. The chief function of the physician in charge is to act in a general advisory capacity, to look after minor injuries requiring immediate treatment, and to detect incipient ailments which may be a menace to the student's own health or to the health of others.

Requirements for the Degree of Doctor of Philosophy

The degree of Doctor of Philosophy cannot be secured in less than three years of graduate study. Two years of such work in another institution of equal rank may be credited in the Graduate College; but the last two semesters of the candidate's work must be carried in residence under the direct supervision of the Graduate Council. Before admission to full candidacy for the degree of Ph.D., each candidate must satisfy the department of Modern Languages that he has an adequate reading knowledge of French and German.

Thesis—On completion of his studies, the candidate must present an acceptable thesis which gives evidence of scholarly research. It must be submitted, typewritten and bound according to a prescribed form, two months before the intended graduation of the candidate. When approved, it will be placed in the Chancellor's office, where it may be examined by members of the faculty. After the thesis has been approved, the candidate files two typewritten copies with the Librarian, in whose custody they remain. The candidate is also required to deposit in the library of the University one hundred printed copies of his thesis. The degree may be conferred before the thesis is printed, provided a security bond is furnished and filed with the Secretary of the Board of Regents. The amount of this bond will be fixed jointly by the Librarian and the Dean of the Graduate College.

Final Examination—After the candidate's thesis has been accepted, he is required to pass a public examination held before an examining committee of not less than three members, including the professors in charge of the major and minor subjects, supplemented by appointment from the Graduate faculty.

Requirements for the Degree of Master of Arts or Master of Science

The degree of Master of Arts or Master of Science will not be given for less than one year of resident graduate work. On completion of his studies the candidate must pass a public examination and present an acceptable thesis. The examination is conducted by the departments concerned and a representative of the Graduate Council. The thesis must be submitted and typewritten two weeks before the intended graduation of the candidate. When approved and accepted it is to be bound in a prescribed form and filed with the librarian, in whose custody it remains.

Graduate Work in Engineering

Graduate work in engineering may be taken by any student who has had preparation in mathematics and science equivalent to that required of undergraduates in engineering, but candidates for the advanced degrees in engineering must, in addition, possess technical preparation equivalent to that required in the undergraduate courses. Graduate work consists of special laboratory investigations, of advanced engineering design or of the collection and reduction of existing data relating to some specific engineering topic. So far as possible such work is arranged to suit the needs of the individual student.

For one full year of resident graduate work with an acceptable thesis covering some phase of the work undertaken, there will be granted the degree of Master of Science in Agricultural, Architectural, Civil, Electrical or Mechanical Engineering, depending upon the particular line of work pursued.

For three full years of resident graduate work in Engineering there will be granted upon the presentation and publication of a suitable thesis the degree of Doctor of Philosophy.

The degrees of Agricultural Engineer, Architectural Engineer, Civil Engineer, Electrical Engineer or Mechanical Engineer may be conferred upon graduates of the University of Nebraska of not less than five years' standing, who have previously received the degree of B.Sc. in Engineering and who have been in responsible charge of work and done meritorious service in the practice of their professions. At the time of registering for such degree the candidate

will present a detailed statement of his preparation work and experience together with an acceptable topic for a thesis. Not less than one year thereafter, during which time he shall have studied and worked under the general supervision of the chairman of the department in which he expects to take his degree, he shall submit his thesis and present himself for examination in the work done under the supervision mentioned above. If the thesis and examination prove satisfactory, he will be recommended for the degree. In no case will a professional degree be conferred in absentia.

The rules of the Graduate College apply to all graduate work, and students taking the same must matriculate in that College.

Fellowships and Scholarships

The University has established a number of graduate fellowships and scholarships with stipend, depending upon the kind and amount of assistance their holders render to the departments in which they are registered. Part of the stipend is the remission of fees other than those for entrance and graduation.

The Graduate Teachers' Diploma

Candidates for the Graduate Teachers' Diploma must have first become candidates for the degree of Doctor of Philosophy or of Master of Arts. It is conferred only upon persons who have received one or other of these degrees. To become a candidate for this diploma the applicant must have met the requirements for the University Teachers' Certificate, and register for advanced courses, under advice of the Committee on Requirements, with reference to a major or a minor in Education.

Courses and Instruction

Offered by the Departments of the Graduate College

Agricultural Engineering

Professors Sjogren *(Chairman)*, Brackett, Associate Professor Smith

COURSES

5. Rural Architecture—Planning of farm buildings and farmsteads. Design of beams and columns. Study of methods of construction, building materials and home conveniences. For engineers only. Drawing 3 hours, credit 3. First semester. Mr. Sjogren

6. Irrigation and Drainage Engineering—Study of problems in irrigation engineering, legal and economic principles. Drainage: study of different systems, preparation of plans and estimates. Engineers only. Drawing 3 hours, credit 4. Second semester. Mr. Sjogren

7. Farm Buildings—Planning of the farmstead. Arrangement, design and construction of farm buildings. Study of water systems, light plants, sewage disposal, ventilation. Advanced non-engineering students. Field work and drawing 6 hours, credit 4. First semester. Mr. Sjogren

8. Irrigation and Drainage—Irrigation from the water users' standpoint. Drainage: study of different systems and methods of installation. Practice with surveying instruments. Advanced non-engineering students. Prerequisite: Agronomy 51. Field work 6 hours, credit 4. Second semester. Mr. Sjogren

15. Motor Vehicles—A detailed study of automobiles, trucks and tractors. Transmissions, differentials, clutches, brakes, starting and lighting systems, etc. Prerequisite: Course 4. Laboratory 6 hours, credit 4. First and second semesters. Mr. Brackett

17. Advanced Forge Work—Special studies in welding with gas, steel work, machine repairing, wagon construction and repair, babbitting, soldering and pipe fitting. Prerequisite: Course 2 or M. E. 3 or 3a. Laboratory 6 hours, credit 2. First semester. Mr. W. Runnalls

18. Advanced Carpentry—Course 1 continued. Building construction, cabinet work, furniture making and wagon construction. Prerequisite: Course 1 or M. E. 1. Laboratory 6 hours, credit 2. Second semester. Mr. Baer

19. Research Work in Rural Architecture, Farm Drainage and Rural Highways—There is a broad field for original investigation in drainage, water supplies, lighting, heating, building materials, farm buildings, road construction and sewerage. Prerequisite: Courses 5 and 6 or 7 and 8. Credit 2 to 5 hours. Mr. Sjogren, Mr. Brackett, Mr. Parsons

20. Research Work in Farm Machinery, Farm Motors and Farm Equipment—An excellent opportunity is offered for testing in the laboratory and in the field of farm machinery and farm motors, traction tests, calibration and economic tests. Prerequisite: Courses 3 and 4. Credit 2 to 5 hours. Mr. Brackett, Mr. Parsons, Mr. Smith

22. Normal Course in Manual Training—An advanced course in carpentry which deals with laboratory equipment for small and large classes, with planning courses, designing and working up exercises. Prerequisite: Course 1 or 31. Laboratory 6 hours, credit 2. Second semester. Mr. Baer

24. Graphics—Studies in graphic presentation of data, curve plotting, curve analysis, blocking and diagramming data, etc. Open to all but planned especially for agricultural students. Credit 2 hours. Second semester. Mr. Parsons

300. Graduate Thesis.

Agronomy

Professors Burr *(Chairman)*, Kiesselbach, Keim

Students taking the work below should have completed at least one year's work in Botany and in Chemistry. For programs and thesis subjects, consult instructors before registration.

COURSES

101. Agronomy Seminar—Presentation and discussion of various agronomic subjects. Reviews of the latest and most important literature and data in Agronomy. Prerequisite: Courses 1, 53. Open only to seniors and graduates. Credit 1 hour. First semester. Departmental Staff

102. Agronomy Seminar—Course 101 continued. Second semester.

104. History, Evolution and Breeding of Field Crops—Relation of farming methods to food supply and human progress. Elementary phases of field crop breeding and improvement. Relationships, classification and nomenclature of field crop plants. Prerequisite: Courses 1 and 53. Credit 2 hours. Second semester. Mr. Keim

105. Methods of Investigation—Study of methods used in investigational work. Experimental error, methods of computing and expressing same. Consultation, laboratory work, assigned readings and critical examination of investigational reports. Registration by arrangement only. Credit 2 to 5 hours. First semester. Mr. Kiesselbach

106. Methods of Investigation—Course 105 continued. Second semester.

131. Dry Farming—Regions. Critical study of climate and soil as determining factors. Adaptation of crops and practices to conditions. Prerequisite: Courses 1, 53. Credit 2 hours. First semester. Mr. Burr, Mr. Keim

162. Soil Physics—Physical properties. Soil moisture; movement, field carrying capacity, availability. Soil temperatures. Colloidal properties. Open to advanced and graduate students only. Laboratory 4 hours, credit 3. Second semester in alternate years. (Not given in 1922-23.) Mr. Russel

166. Soil Fertility—Chemical composition. Interpretation of the analysis. Colloids. Theories regarding fertility and infertility. Crop production of different

soil types. Manures and commercial fertilizers. Open to advanced and graduate students only. Laboratory 4 hours, credit 3. Second semester in alternate years.

Mr. Russel

177. Soil Classification and Survey—Materials and processes of soil formation. Systems of soil classification. Methods of soil survey work. Value of soil surveys to regional problems and investigations. Prerequisite: Agronomy 53. Geography 64 desirable. Credit 2 hours. Second semester.

Mr. Russel, Assistants

191. Current Agronomy Literature—A study of technical soil and crop bulletins. Assigned readings in current issues of the leading Agronomic journals. Designed for assistants and graduate students majoring in soils or crops. Registration by arrangement. Credit 1 to 2 hours. First semester.

Mr. Keim, Mr. Russel

192. Current Soils Literature—Course 191 continued. Second semester.

209. Research in Agronomy—Assignment of special problems in crops and soils for individual investigation. Opportunity and encouragement are offered to those registering for advanced degrees. Open only to men of adequate training and by arrangement. Credit according to work. First semester.

Departmental Staff

210. Research in Agronomy—Course 209 continued. Second semester.

Ancient Languages

Professors Lees *(Chairman)*, Barber, Associate Professors Sanford, Rice

As a prerequisite to the higher degrees (A.M., Ph.D.) a candidate must have had a major in this department or an equivalent in another institution. The object of the work leading to these degrees is to familiarize the student with Greek and Roman life and thought as expressed in literature, as well as to give him a fair mastery of the basic languages of the Indo-European family. The course of study directed to this end is laid out with the approval of the Dean of the Graduate College. The usual final examination and dissertation are required. The A.M. degree may be taken in one or more of the languages, the Ph.D. in one language as a major and one or two as minors.

The graduate work in Greek, Latin and Sanskrit is arranged in a cycle of three years, consisting of six semestral courses. In Greek and Latin one semester of each year is devoted to poetry and the other semester to prose. The graduate student is expected to read the more important works of the writers discussed during the semester.

The purpose of the work in Sanskrit is to give the student such a knowledge of basic grammatical forms and syntactical structure as will assist in the compre-

hension and mastery of classic phenomena and forms, and their relation to derived modern languages.

The graduate semestral courses in Latin arranged by years are—(1) Historiography, Elegiac Poetry; (2) Epistolary Latin, Epic Poetry; (3) Philosophy, The Satire. The cycle of graduate courses in Greek consists of—(1) Epic Poetry, History; (2) Lyric Poetry, Philosophy; (3) Dramatic Poetry, Oratory.

The following courses will be offered in 1922-1923.

201. Latin Historiography—Credit 3 to 5 hours. First semester.

202. Latin Elegiac Poetry—Credit 3 to 5 hours. Second semester.

225. Greek Dramatic Poetry—Credit 3 to 5 hours. First semester.

226. Greek Oratory—Credit 3 to 5 hours. Second semester.

241. Beginning Sanskrit—Inflections and conjugations. Interpretation of an easy text. Credit 3 hours. First semester. Mr. Lees

242. Elementary Sanskrit—Selected readings from the Nala and the Hitopadeca. Credit 3 hours. Second semester. Mr. Lees

243. Advanced Sanskrit—Selections from the Kathasaritsagara and the Manava Dharmacastra. Credit 2 to 3 hours. First semester. Mr. Lees

244. Advanced Sanskrit—Reading and interpretation of selected hymns of the Rig-Veda. Credit 2 to 3 hours. Second semester. Mr. Lees

Animal Husbandry

Professor Gramlich *(Chairman)*, Associate Professor Loeffel, Assistant Professor Savin

Students desiring graduate work, with or without reference to a second degree, should consult the Chairman of the department before registration.

COURSES

101. Problems in Animal Production—Study of experimental methods employed in working out feeding problems, planning and conducting experiments, keeping records and working up experimental data. Hours for consultation. Credit to be arranged. Instructional Staff

Applied Mechanics and Machine Design

Professors Chatburn *(Chairman)*, Slaymaker, Assistant Professor Duff, Mr. Carlton, Mr. Moritz, Mr. McNaul

COURSES

106. Machine Design—The rational design of machine elements such as shafting, shaft couplings, pulleys, fly-wheels, power-screws, bearings and guides.

Prerequisite: Courses 1, 2, 3 and 14. Attendance and drawing 9 hours, credit 3. First and second semesters. Mr. Slaymaker

107. MACHINE DESIGN—The systematic application of the principles of applied mechanics to the design of machines. Complete designs, studies of constructive details, calculations of strength of parts and estimates of cost. Prerequisite: Course 106. Attendance and drawing 6 hours, credit 2. First and second semesters. Mr. Slaymaker

108. ENGINE DESIGN (STEAM AND INTERNAL COMBUSTION)—Working from given horse power and speed the student calculates the principal dimensions and makes detailed assembly and group drawings of the various parts. Drafting 6 or 9 hours, credit 2 or 3. Second semester. Mr. Slaymaker

113. STEREOTOMY—Stone cutting problems. Delineation of stones in structures; patterns, bevels, etc. Applications to designing of forms for artificial stones, arches, culverts, etc. Prerequisite: Courses 1 and 2. Drawing and laboratory 6 hours, credit 2. First and second semesters. Mr. Chatburn

115. MECHANICS OF MATERIALS—Resistance of materials, including reinforced concrete; mechanics of beams, columns, shafts, etc.; laboratory experiments. Prerequisite: Course 14. Attendance 3 hours, laboratory 6, credit 5. First and second semesters. Mr. Chatburn, Mr. Duff, Mr. McNaul

116. MECHANICS OF MATERIALS—Course 115 condensed for students in the Agricultural, Electrical and Mechanical Engineering groups. Prerequisite: Course 14. Attendance 2 hours, laboratory 3, credit 3. First and second semesters. Mr. Chatburn, Mr. Duff, Mr. McNaul

118. MATERIALS OF CONSTRUCTION—Manufacture and general properties. Mechanical properties of materials as revealed by actual tests. Comparison of tests. Prerequisite: Course 115 or 116. Attendance 1 hour, laboratory 3, credit 2. Second semester. Mr. Chatburn, Mr. Duff

122. GRAPHIC STATICS—Elements of graphic statics applied to engineering construction. Prerequisite: Course 14. Attendance 1 hour, drawing 6, credit 3. Second semester. Mr. Chatburn

125. ROAD MATERIALS TESTING—Examination, classification and testing of non-bituminous road and pavement materials. Prerequisite or parallel: Course 14 and C. E. 131. Attendance 1 hour, laboratory 3, credit 2. First and second semesters. Mr. Duff

126. ROAD MATERIALS TESTING—Course 125 continued. Special attention given to bituminous materials. Laboratory 6 hours, credit 2. First and second semesters. Mr. Mickey

127. SPECIFICATIONS AND WORKING DRAWINGS—Plans, elevations and details of dwelling houses, walls, roofs, cornices, doors, windows, stairs, etc.; specifications and estimate of cost; materials. Lecture 2 hours, drawing 6, credit 4. First semester. Mr. Slaymaker

128. Specifications and Working Drawings—Foundations; masonry; external finish; bonds; terra-cotta design, etc.; columns, beams, girders and footings; joints and connections; use of architectural hand-books. Lecture 2 hours, drawing 6, credit 4. Second semester. Mr. Slaymaker

129. Architectural Composition and Design—Elements governing architectural composition and design. Analysis of good examples of classic architecture. Individual instruction, drawing and criticism. Prerequisite: Courses 1 and 2. Attendance and drawing 6 or 9 hours, credit 2 or 3. First and second semesters. Mr. Moritz

133. Engineering Freehand Sketching—Quick and accurate freehand shop and architectural sketches in orthographic, cabinet and perspective. Drawing 3, 6 or 9 hours, credit 1, 2 or 3. First and second semesters. Mr. Moritz

134. Advanced Mechanics—Open to students who have completed Course 14 and Mathematics 4. Credit 3 hours. Second semester. Mr. Chatburn

300. Graduate Thesis.

Astronomy

Professors Swezey *(Chairman)*, Brenke

Master of Arts—Any of the courses in the senior division comprising six hours credit may constitute a minor for a student who takes two minors for his degree. Any two such courses may be taken as a single minor. Two such courses and a thesis constitute a major.

Doctor of Philosophy—The department does not undertake major work for this degree, but the courses offered for the degree of Master of Arts may be chosen as minors by candidates for the doctorate taking their majors in other departments.

COURSES

MERIDIAN ASTRONOMY

113. Timekeeping—The use of the transit instrument in the precise determination of time, and the regulation of sidereal and mean time clocks and chronometers. Requires plane trigonometry. Credit 2 or 3 hours. First semester. Mr. Swezey

114. The Problem of Latitude—The use of the meridian circle and the zenith telescope in precise determinations of latitude, and kindred problems. Requires plane trigonometry. Credit 2 or 3 hours. Second semester. Mr. Swezey

ASTROPHYSICS

115. Astronomical Spectroscopy—An acquaintance with the various types of spectroscopes, spectrografs and spectroheliografs used by astronomers; measurement of spectrograms for wave length and radial motion. Credit 2 or 3 hours. First semester. Mr. Swezey

116. Astronomical Photography—Methods used in photographing the sky. The measurement of photographs for finding precise positions and dimensions. Credit 2 to 3 hours. Second semester. Mr. Swezey

MATHEMATICAL ASTRONOMY

121. Celestial Mechanics—Requires the calculus. Credit 3 hours. First semester. Mr. Brenke

122. Celestial Mechanics—Course 121 continued. Second semester.

Bacteriology and Pathology

Professor Waite

As requirements for registration in this department for advanced degrees, the applicant must have completed work equivalent to that of a general scientific course in this University. Before registration for an advanced degree the candidate must consult the chairman of the department.

Master of Arts—Second minor: Courses 101 and 103, or 101 and 104. First minor: Courses 101 and 103, or 101 and 104 and its equivalent along some special line of research. Major: Advanced work following the courses outlined above with a thesis.

COURSES

101. Elementary Bacteriology—Introduction to the study of bacteriology. The relation of bacteria to other organisms. Morphology, structure, chemical composition and chemical changes produced. Prerequisite: One year chemistry. Laboratory 4 hours, credit 2. First and second semesters.
Mr. Waite, Mr. Lindgren

103. Dairy Bacteriology—Sources of bacteria in milk. Lactic and butyric acid fermentation, peptonizing and rennet-forming bacteria. Relation of milk to spread of disease. Micro-organisms in butter and cheese making. Prerequisite: Course 101. Laboratory 4 or 6 hours, credit 3 or 4. First and second semesters.
Mr. Waite, Mr. Lindgren

104. Agricultural Bacteriology—Nitrogen problem. Bacteria in ammoniacal fermentation, nitrification and dentrification. Bacteria as a means of reclaiming nitrogen lost from the soil. Pure cultures in growing leguminous plants. Azobacteria. Prerequisite: Course 101. Laboratory 4 hours, credit 3. Second semester. Mr. Waite, Mr. Lindgren

105. Bacteriology—Morphology, structure and chemical composition of micro-organisms; chemical changes which they produce; principles of sterilization and disinfection; pathogenic bacteria found in the mouth; immunity and methods of securing it. Prerequisite: One year chemistry. Laboratory 8 hours, credit 4. First semester. Mr. Waite, Mr. Lindgren

106. Pathology—Study of general pathological processes with special reference to inflammation, specific tissue reactions, tumors and changes occurring in the mouth. Prerequisite: Course 105, Histology 24. Open only to dental students. Laboratory 8 hours, credit 4. Second semester. Mr. Waite, Mr. Lindgren

Botany

Professors Pool *(Chairman)*, Weaver, Peltier, Associate Professors E. R. Walker, L. B. Walker

Candidates for an advanced degree in this department must have satisfactorily completed or must take general botany (Courses 1 and 2, or 7), Courses 3, 4, 105, 106, 113, 114, 119, 120, 115, 124, 129, 130, or their equivalent, and one year of zoology.

After consultation students may register for the following courses:

Master of Arts—For major, candidates may select work in cytology, histology, systematic botany, physiology, ecology, mycology and pathology, Courses 237 to 247; for minors, any courses excepting 1, 2, 3, 4, 7, 105, 106, 113, 114, 119, 120, 115, 124.

Doctor of Philosophy—Major: Courses 237 to 247. Minors: Any courses which the student is prepared to enter excepting 1, 2, 3, 4, 7, 105, 106, 113, 114, 119, 120, 115, 124.

A number of scholarships and fellowships in botany are available in the Graduate College for properly equipped students who wish to enter upon graduate work in botany. Information relative to these positions may be secured from the Dean of the Graduate College or from the chairman of this department.

COURSES

(Students may register for any of these courses year after year until the completion of their problem.)

237. Research in Mycology—Assigned problems in field and laboratory. Credit 5 to 10 hours. First and second semesters. Miss L. B. Walker

241. Research in Taxonomy—Assigned problems in field and herbarium. Credit 5 to 10 hours. First and second semesters. Mr. Pool

243. Research in Morphology—Assigned problems in the morphology of a plant or group of plants. Credit 5 to 10 hours. First and second semesters. Mr. Pool, Miss E. R. Walker

245. Research in Physiology or Ecology—Assigned problems in field and laboratory. Credit 5 to 10 hours. First and second semesters. Mr. Pool, Mr. Weaver

247. Research in Plant Pathology—Assigned problems in the field and laboratory. Credit 5 to 10 hours. First and second semesters. Mr. Peltier

Chemistry

Professors Upson *(Chairman)*, Deming, Anderson, Associate Professor Brown, Assistant Professors Hendricks, Frankforter, Mr. Thompson

FOR THE MASTER'S DEGREE

For the Master's degree a dissertation and not less than 15 hours in advance of Courses 120, 134 and 151 are required. These should be selected on consultation with the chairman of the department. The thesis must embody the results of research under the direction of a member of the department.

FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

1. Candidates for the degree of Doctor of Philosophy must present a thesis embodying the results of original investigation in one of the divisions of chemistry. The investigation is usually carried out under the direction of a member of the department and occupies from three to five semesters depending on the student's preparation.

2. The candidate must select not less than 40 hours according to the thesis subject from the following courses: 105, 122, 123, 133, 134, 147, 148, 149, 152, 158, 167, 210, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 253, 254, 255.

3. In addition to fulfilling the above requirements the candidate must select a minor of from 10 to 15 hours of work of an advanced character in some other department. Minors should be selected from the following subjects: Physics, botany, bacteriology and geology.

4. At least one year prior to taking his degree the candidate must pass a preliminary examination in his major subject. This examination may be waived in case the candidate holds a Master's degree from this institution. The candidate must also pass a final written and oral examination in the major and minor subjects.

Students selecting a minor in chemistry for the Ph.D. degree must complete 12 hours or more in advance of Courses 120, 31 and 151.

COURSES

210.—Special Topics in Inorganic Chemistry—Discussion of selected topics in inorganic chemistry such as complex salts, hydrates, peroxides, Werener's theory, etc. The topics may be changed from year to year. Prerequisite: Courses 120 and 152. Credit 2 hours. Second semester. Mr. Deming

Note:—The following courses, 235 to 239—lectures in advanced Organic Chemistry—together with 241 and 242 cover a period of two years. Students may enter any semester. Lectures and readings based on "Cohen's Organic Chemistry for Advanced Students" and Chemical Journal articles. The ability to read French or German is essential. Prerequisite: Course 134.

235. Stereo-isomerism and the Sugars. Credit 2 hours. First semester. Mr. Upson

236. PHYSICO-ORGANIC CHEMISTRY—Properties and structure, Stearic hindrance, geometrical isomerism. Credit 2 hours. First semester. Mr. Anderson

237. ORGANIC NITROGEN COMPOUNDS, exclusive of dyes and proteins. Credit 2 hours. Second semester. Mr. Anderson

238. ORGANIC CONDENSATION REACTIONS. Credit 2 hours. Second semester. Mr. Upson

239. THE BENZINE SERIES, DYES. Credit 2 hours. First semester. Mr. Upson

241. QUALITATIVE ORGANIC ANALYSIS—Prerequisite: Courses 19, 120 and 134. Laboratory 9 to 15 hours. Credit 3 to 5 hours. First semester. Mr. Anderson

242. ORGANIC ELEMENTARY ANALYSIS—Laboratory 9 to 15 hours, credit 3 to 5. Second semester. Mr. Upson, Mr. Anderson.

243. ADVANCED ORGANIC PREPARATIONS—Laboratory work in organic chemistry preparatory to research. The preparation of a number of typical organic compounds. Prerequisite: Course 134. Laboratory 9 to 15 hours, credit 3 to 5. First semester. Mr. Upson

244. ADVANCED ORGANIC PREPARATIONS—Course 243 continued. The repetition of some classical piece of organic research. Second semester.

253. ADVANCED PHYSICAL CHEMISTRY—The kinetic molecular theory. Chemical kinetics. Prerequisite: Course 152 and a full year of calculus. Laboratory 3 to 9 hours, credit 3 to 5 hours. First semester. Mr. Deming

254. ADVANCED PHYSICAL CHEMISTRY—Course 253 continued. Thermodynamics, chemical equilibrium, quantum theory. Second semester.

255. SPECIAL TOPICS IN INORGANIC AND PHYSICAL CHEMISTRY—Topics may be varied from year to year. Prerequisite: Course 152. Credit 2 hours. First semester. Mr. Brown

RESEARCH IN CHEMISTRY

The following courses include from thirty to forty hours per week of laboratory work in one of the divisions of chemistry under the direction of a member of the department. The research work for a Doctor's thesis requires from three to five semesters. The candidate must satisfy the members of the department that he has had adequate training before he will be admitted to research.

280. RESEARCH IN ORGANIC, OR COLLOID CHEMISTRY. Mr. Upson

282. RESEARCH IN INORGANIC OR PHYSICAL CHEMISTRY. Mr. Deming

284. RESEARCH IN ORGANIC CHEMISTRY. Mr. Anderson

286. RESEARCH IN ANALYTICAL OR PHYSICAL CHEMISTRY. Mr. Brown

288. RESEARCH IN INDUSTRIAL CHEMISTRY. Mr. Frankforter

290. RESEARCH IN BIOCHEMISTRY. Mr. Thompson

Civil Engineering

Professor Mickey *(Chairman)*, Associate Professor Evinger, Assistant Professor Mason

COURSES

111. Hydraulics—Hydrostatics, hydrokinetics and hydrodynamics. Flow of water through orifices, pipes, Venturi meters, in open channels and over weirs; hydraulic pumps; impulse wheels; reaction and mixed flow turbines; high head pipe lines. Prerequisite: Calculus, A. M. 14. Credit 3 hours. First and second semesters. Mr. Mickey

112. Irrigation and Drainage—The use and duty of water in irrigation; Nebraska and Federal laws relating to projects; organization, design, construction and maintenance of irrigation and drainage systems; economic considerations. Prerequisite: Course 141. Credit 2 hours. First semester. Mr. Evinger

113. Masonry Construction—Materials, their occurrence, preparation and use; foundations, retaining walls, abutments, bridge piers, piling, dams, culverts and arches. Prerequisite: A. M. 14. Credit 3 hours. First semester. Mr. Mason

114. Route Surveying—Theory and practice of the methods utilized in location and construction of canals, highways and railroads; vertical and circular curves; earthwork surveys and computations. Prerequisite: Course 10. Attendance 1 hour, field and drafting room 6, credit 3. First semester. Mr. Pahl

116. Stresses in Framed Structures—(For Civil and Architectural Engineering students.) Roof, highway and railway bridge trusses; influence lines and equivalent uniform loads; office and factory buildings. Prerequisite: A. M. 115 or 116. Credit 4 hours. Second semester. Mr. Mason

125. Steel Design—Design of roof trusses, highway and railway bridges, office and factory buildings and miscellaneous structures. Prerequisite: Course 116. Attendance 1 hour, drafting 6, credit 3. First semester. Mr. Mason

127. Reinforced Concrete Design—Design and detailed drawings of slabs, joists, beams, girders, columns and footings for office and factory buildings; fire- and water-proofing methods. Prerequisite: A. M. 115 or 116. Attendance 1 hour, drafting 6, credit 3. First semester. Mr. Mason

128. Advanced Reinforced Concrete Design—Continuous concrete beams and girders of unequal spans; eccentrically loaded columns and rigid frames; slab and girder bridges; arch bridges. Prerequisite: Course 127. Attendance 1 hour, drafting 6, credit 3. Second semester. Mr. Mason

131. Roads and Pavements—Lectures, assigned readings and reports. Credit 2 hours. Second semester. Mr. Chatburn

132. Highway Engineering—Nebraska and Federal highway laws; administration and organization of highway departments; preliminary investigations and

financing of highway projects; highway traffic; design, construction and maintenance of highway systems. Prerequisite: Course 131. Credit 3 hours. Second semester.
Mr. Mickey

134. Design of Highway Bridges—Design of highway bridges and culverts of timber, steel, plain and reinforced concrete; studies in bridge contracting, erection and construction. Prerequisite: Course 125. Attendance 1 hour, drafting 6, credit 3. Second semester. Mr. Mason

141. Hydrology—Occurrence and distribution of water; relation between precipitation and run-off; effect of evaporation, topography, geology, temperature and run-off; storage of water; floods and their control; river control. Prerequisite: Course 101 or 111. Credit 2 hours. Second semester. Mr. Evinger

142. Hydraulic Engineering—Water power development; stream flow, pondage and storage; design of dams, reservoirs and power plants; computations for and selection of machinery. Prerequisite: Course 141. Credit 3 hours. Second semester. Mr. Evinger

151. Railway and Highway Construction—Theory and practice in the construction of roadbed, tunnels and minor structures; cost data and analysis; specifications and estimates. Prerequisite: Course 114. Credit 2 hours. First semester.
Mr. Pahl

152. Railway Engineering—Theory and practice of railway location; equipment of railways; railway organization; operation costs, receipts and expenses. Prerequisite: Course 151. Credit 3 hours. Second semester. Mr. Pahl

161. Public Water Supplies—General study of municipal water supply problems; sources, quality, quantity, collection, purification, pumping and distribution of water; investigations and designs. Prerequisite: Course 141. Credit 2 hours. First semester. Mr. Evinger

162. Sanitary Engineering—Sewer design and construction; sewage disposal and treatment; sanitary and storm water sewers; garbage and waste disposal; special investigations and designs. Prerequisite: Course 141. Attendance 2 hours, drafting 3, credit 3. Second semester. Mr. Evinger

171. Bridge and Building Construction—Scientific planning and management of construction projects; routing of materials and labor; plant selection, layouts and organization; cost keeping, progress charts and practical exercises in planning and estimating. Prerequisite: Course 116. Credit 2 hours. First semester.
Mr. Mason

172. Bridge Engineering—Viaducts, railway and highway bridges; elevated railway and subway construction; indeterminate structures; temperature stresses; theorem of least work; design of a structure. Prerequisite: Courses 125 and 127. Attendance 1 hour, computation and drafting 6, credit 3. Second semester.
Mr. Mickey

177. Engineering Relations, Contracts and Specifications—Elements and factors of success; personal and ethical relations; letters and reports; legal relations, rights and responsibilities; preparation of contracts and specifications. Credit 2 hours. First semester. Mr. Evinger, Mr. Mickey

180. Engineering Economics—Engineering valuations and appraisals; economics applied to engineering works; presentation of papers based on investigations made by students. Credit 2 hours. Second semester. Mr. Mickey

185. City Planning—Influences affecting urban community development; land subdivision; street thorofare and transit systems; transportation terminals; park systems; civic centers; housing and zoning. Prerequisite: Junior or senior standing. Credit 2 hours. First semester. Mr. Evinger

200. Thesis—For seniors, on approval. Credit 3 to 5 hours. Mr. Mickey

300. Graduate Thesis.

Dairy Husbandry

Professor Davis *(Chairman)*, Assistant Professors Hendrickson, Luithly, Thompson

This department is well equipped to give training in advanced as well as initial courses. Graduate instruction is offered for—(1) Students preparing to teach some phase of dairying in colleges and universities; (2) Persons wishing to broaden their knowledge as experts in dairying; and (3) Students holding first degrees who are particularly interested in research and investigational work in dairying.

Courses offered under calendar numbers 1, 5, 6, 7, 9 and 13 and similar work taken in other institutions will not be accepted as fulfilling any part of a graduate major or graduate minor in this department.

COURSES

101. Research Methods—A critical study of experiment station methods and technique in the conduct of research and investigational work. Credit to be arranged. First semester. Mr. Davis and Staff

103. Research in Milk Production—Study of the problems affecting the breeding, care, selection, feeding and management of dairy cattle and related problems bearing on the production and marketing of milk. Assignments to investigations in progress may be made. Thesis is required. First and second semesters. Credit to be arranged. Mr. Davis and Staff

105. Research in Dairy Manufactures—Study and investigational work relating to milk, butter, cheese, ice cream and other dairy products. Credit to be arranged. First and second semesters. Mr. Davis, Mr. Luithly

Economics and Commerce

Professors LeRossignol *(Chairman)*, Virtue, Martin, Ivey, Associate Professors Kirshman, Wolfe, Assistant Professors Bullock, McNeill, Cole, Fullbrook

Candidates for the degree of Master of Arts are required to complete at least one year's work and to present a satisfactory thesis, showing ability to carry on independent investigation and to assemble the results. A candidate may give all his time to economic studies, or he may offer a major (24 hours) in this department and a minor (10 hours) in another.

Candidates for the degree of Doctor of Philosophy are required to complete at least the equivalent of three years' work after taking the Bachelor's degree or two years' work after the Master's degree, but the degree will not be granted unless the candidate attains a satisfactory standard of scholarship, irrespective of time of residence or study. In addition to his major course, which should represent about three-fifths of the total work, the candidate may offer one minor or two. Candidates taking a major in economics are usually advised to take minors in history, political science, philosophy or other subjects more or less closely related to the major. In every case a thesis is required, embodying the results of original investigation.

COURSES

Prerequisite for all courses: Courses 11 and 12.

101. Money and Banking—Functions of money; monetary standards; value of money; history of our monetary system; credit and foreign exchange; functions of banks; issue of bank notes; defects of old banking system; Federal Reserve System. Credit 3 hours. First semester. Mr Kirshman

102. Practical Banking—The banker's point of view is assumed thruout. Organization and daily operations within the bank. Loans, discounts, collateral, transits, exchange and inter-banking relations are covered. The bank is treated as a going concern. Credit 3 hours. Second semester. Mr. Kirshman

105. Corporation Finance—Railroad, industrial and public utility corporations; corporate securities; promotion and capitalization; administration of income; consolidations; receivership and reorganization; analysis of corporate reports. Credit 2 hours. First semester. Mr. Kirshman

106. Corporation Finance—Course 105 continued. Second semester.

108. Trust Problems—Rise and growth of trusts; various types of trusts; federal and state regulation of trusts; commission control; court decisions; economic bases of combinations; proposed remedies. Credit 3 hours. Second semester. Mr. Bullock

109. Economic Crises—Comparative study of crises from the seventeenth century to the present. Theory of crises; transmission of crises from country to country; fluctuation in investment, bank items and prices; business barometrics. Credit 2 hours. First s mester. *(Not given in 1922-1923.)*

110. INVESTMENTS—Economics of investment; safeguarding investment funds; corporate, municipal, government, foreign securities; principles of investment; taxation; the money market; technique of investment; analysis of corporation reports. Credit 3 hours. Second semester. Mr. Kirshman

111. FIRE INSURANCE—History and economics of fire insurance; analysis of hazard; determination of the rate; organization of companies and agencies; the standard policy; coinsurance and reinsurance; loss adjustment; finances of companies; public regulation; Nebraska code and practice. Credit 3 hours. First semester. Mr. Wolfe

112. LIFE INSURANCE—History of life insurance; insurance administration; governmental control; methods of computing premiums; organization and management of agencies; taxation; comparative study of policy contracts. For the mathematical basis of insurance see Mathematics 42. Credit 3 hours. Second semester. Mr. Wolfe

116. STATISTICS—Theory, preparation and interpretation of statistics; kinds of averages and their uses; frequency curves; the normal curve of distribution; correlation; accuracy; graphic methods. Laboratory 2 hours, credit 3. First semester. Mr. Wolfe

120. TARIFF HISTORY OF THE UNITED STATES—Relation of the tariff to industry and trade; tariff systems of other countries; protection and free trade; reciprocity agreements; selected industries in relation to tariff legislation; tariff administration. Credit 2 hours. Second semester. *(Not given in 1922-1923.)* Mr. Virtue

121. INTERNATIONAL TRADE AND TRADE POLICIES—Historical sketch of modern commerce; recent commercial developments; theory of international trade; commercial policies, mercantilism, free trade, protection; tariff policies of the United States and other important countries; merchant marine. Credit 2 hours. First semester. Mr. Fullbrook

122. METHODS OF FOREIGN TRADE—Export and import methods; promotion of foreign business, export department, commission houses, forwarding agents and other sales agencies; agencies for promoting foreign commerce; consular service; combinations for foreign trade; financing foreign trade. Credit 2 hours. Second semester. Mr. Fullbrook

124. FINANCIAL HISTORY OF THE UNITED STATES—Financial operations of the Federal government since 1789; sources of Federal revenue and objects of expenditure; financial management in time of war; the public debt; evolution of monetary and banking systems. Credit 3 hours. Second semester. *(Not given in 1922-1923.)* Mr. Virtue

125. RAILWAY ECONOMICS—Growth of the railway net; methods of system development; capital and capitalization; railway organization and service; theory of rates; rate structures; state and federal regulation; results of national operation during the war; Act of 1920. Credit 3 hours. First semester. Mr. McNeill

126. MUNICIPAL INDUSTRIES—Development in the United States and foreign countries; franchises; organization; service; financial management; valuation of tangible and intangible assets; public regulation of rates and service; public ownership and operation. Credit 3 hours. Second semester. Mr. McNeill

131. PRINCIPLES OF ADVERTISING—The purpose and function of advertising; psychological problems involved; the physical structure of copy; selecting mediums; testing advertisements; elements of display; principles of form, color, illustration, ornament and type. Credit 2 hours. First semester. Mr. Ivey

132. ADVERTISEMENT WRITING—Assignments given in the formulation of campaigns, writing copy, designing layouts, selecting type, etc., for various kinds of merchandise. Course is conducted in cooperation with various Lincoln business houses. Credit 2 hours. Second semester. Mr. Ivey

135. RETAIL STORE MANAGEMENT—A study of retail store problems as regards accounts and operating expenses; store organization; store location; store lay-out, equipment and service; purchasing and selling; education and employment; different types of stores and their special problems. Credit 2 hours. First semester. Mr. Ivey

136. SALESMANSHIP—Wholesale, specialty and retail salesmanship. A study of different types of customers and their buying motives; the relationships of merchandise; the salesman's personality; the mental law of sale; meeting objections; selling by suggestion; sales campaigns; demonstration sales. Credit 2 hours. Second semester. Mr. Ivey

141. BUSINESS ORGANIZATION—Study of the underlying principles of organization and management and their application in various types of business undertakings. Credit 2 hours. First semester. Mr. Martin

142. BUSINESS ORGANIZATION—Course 141 continued. Second semester.

151. COST ACCOUNTING—Essential features of accounting for manufacturing concerns with particular reference to the securing of unit costs and the application of cost data in plant management. Prerequisite: Courses 5 and 6. Laboratory 3 hours, credit 3. First semester. Mr. Cole

152. COST ACCOUNTING—Course 151 continued. Second semester.

153. ADVANCED ACCOUNTING—Advanced theory of accounting with practice in the solution of problems selected from C. P. A. examinations. Valuation of assets; capital vs. revenue expenditures; good-will; depreciation; reserves and reserve funds; sinking funds. Prerequisite: Course 6. Credit 3 hours. First semester. Mr. Martin

154. ADVANCED ACCOUNTING—Course 153 continued. Realization and liquidation accounts; insolvency accounts; executorship and trustee accounts; governmental accounting; insurance company accounts and similar topics. Second semester.

155. AUDITING—Duties and responsibilities of an auditor; the methods of conducting various kinds of audits; the preparation of the auditor's report; the auditor's

certificate; special problems in the audit of different kinds of business undertakings. Prerequsite: Course 154. Credit 2 hours. First semester. Mr. Martin

161. Business Law—Contracts, including mistake, fraud, duress and capacity of parties; sales and mortgages of personal property; bailments. Credit 3 hours. First semester. Mr. Bullock

162. Business Law—Course 161 continued. Negotiable instruments; suretyship and guaranty; agency; partnership; private corporations; bankruptcy. Second semester.

164. Business Law—Study of the law relating to particular kinds of business. Open to a limited number of senior students. Credit 1 hour. Second semester. Mr. Bullock

171. Public Finance—Principles of public finance; public expenditures; financial administration, with special reference to budget procedure; sources of revenue; nature of the taxing power; tax systems of leading countries; the income tax. Credit 3 hours. First semester. Mr. Virtue

172. Public Finance—Course 171 continued. Public debts and war finance; state and local taxation; the revenue system of a typical state, Nebraska; movement for tax reform; the single tax; county and municipal finance. Second semester.

181. Labor Problems—History of the labor movement in Europe and America; theory of wages; methods of remuneration; migration; rise and fall of wages; labor legislation; labor and the war. Credit 3 hours. First semester. Mr. LeRossignol

182. Methods of Industrial Peace—Organization of employers and laborers; strikes and settlement of disputes; trade agreements; voluntary and compulsory arbitration; experience of New Zealand, Australia and Canada. Credit 3 hours. Second semester. *(Not given in 1922-1923.)* Mr. LeRossignol

185. Socialism—History of socialistic thought before the French Revolution; utopian theories of Owen, Saint-Simon, Fourier; anarchistic theories of Proudhon and Bakunin; Karl Marx and other German socialists; syndicalism; the I. W. W.; guild socialism; bolshevism. Credit 3 hours. Second semester. Mr. LeRossignol

191. Advanced Economics—Review of economic theory, together with a history of economic thought, ancient, medieval and modern; recent economic theories in relation to industrial conditions. Credit 2 or 3 hours. First semester. Mr. LeRossignol

192. Advanced Economics—Course 191 continued. Second semester.

201. Economic Seminar—Intensive study of selected subjects under the personal direction of members of the Faculty. Reports of investigations by students and Faculty. General discussion and criticism. Open to graduates and other advanced students. Credit 2 or 3 hours. First semester. Mr. LeRossignol, Mr. Wolfe

202. Economic Seminar—Course 201 continued. Second semester.

Education

Professors Fordyce, Sealock, Earhart, Reed, Taylor, Mr. Lantz

The graduate courses in Education aim to give the candidate such academic and professional preparation as may fit him for administrative and supervisory functions in the larger school systems, for skill in departmental teaching or for chairs in normal schools and colleges. The courses offered are in the following four departments: Supervision and Criticism of Instruction, History and Principles of Education, School Administration and Educational Measurements and Research. The Teachers College is the headquarters of the Nebraska Bureau of Educational Measurements which provides opportunity for apprenticement in the field of research.

The courses are open to such students as meet the requirements for matriculation in the graduate college and who have had such preliminary training as is represented by the University Teachers Certificate. For the degree of Master of Arts the candidate must complete thirty-two semester hours including a thesis of at least five hours in value; the courses may be wholly in Education or may be divided between a major in Education and a minor in other departments or the minor may be in Education and the major in other departments. The thesis for the second degree need not involve to any appreciable degree original work but it must show ability to collect, organize and interpret educational data and give evidence that the literature involved has had a critical study.

THE GRADUATE TEACHERS DIPLOMA

Graduate students pursuing a major or a minor in Education for either the Master's or Doctor's degree, who in addition to qualifying for the degree give evidence of skill in the field of teaching or supervision and administration are awarded the Graduate Teachers Diploma, which is accepted as a professional teacher's certificate in Nebraska and in most other states. The candidate for this diploma must in addition to the work prescribed for the advanced degree give promise of superior professional service in the field of education thru character, technical training and either tested successful experience or thru a semester devoted either to teaching or supervision in the Teachers College High School. The granting of the advanced degree is indicative of the quantum and quality of the academic achievements while the Teachers Diploma gives evidence of the ability to apply the achievement in professional service.

COURSES

SUPERVISION AND CRITICISM OF INSTRUCTION

Professors Brownell *(Chairman)*, Earhart

212. Professional Course for Elementary School Principals, Supervisors and Critic Teachers—The relation of supervision to the aims of the elementary school; standards of supervision; testing the quality and results of instruction; providing necessary aids. Admission with consent of instructor. Credit 2 hours. Second semester. Miss Earhart

271. SEMINARY IN THE TECHNIQUE OF INSTRUCTION OF ENGLISH—Advanced study of problems in the teaching of English. Credit 2 hours. First semester. Mr. Stuff

272. SEMINARY IN THE TECHNIQUE OF INSTRUCTION OF ENGLISH—Course 271 continued. Second semester.

HISTORY AND PRINCIPLES OF EDUCATION

Professor Sealock *(Chairman)*

231. HISTORY OF ANCIENT AND MEDIEVAL EDUCATION—Study of the education of the period from the standpoint of its political, social, economic and religious problems. Comparisons with present educational situation. Special attention to source of material. Credit 2 hours. First semester. Mr. Sealock

232. HISTORY OF MODERN EDUCATION—Study of the various aspects of education during this period in order to secure a clear and comprehensive understanding of the educational problems of today. Credit 2 hours. Second semester. Mr. Sealock

237. EDUCATION AND DEMOCRACY—Fundamental doctrines and principles underlying education in a democracy, psychological and sociological bases, relation of education to progress, the state and education. Credit 2 hours. First semester. Mr. Sealock

238. PROJECT METHOD AND THE CURRICULUM—Principles involved in the selection of subject matter and in determining methods of instruction; psychological and sociological basis of the project method; its relation to the curriculum and the aim of education. Credit 2 hours. Second semester. Mr. Sealock

239. SEMINAR—A study of current educational literature for the purpose of determining the fundamental doctrines and principles underlying present-day curricula, methods and practices. Credit 2 hours. First semester. Mr. Sealock

SCHOOL ADMINISTRATION

Professor Taylor *(Chairman)*

242. THE SECONDARY SCHOOL—An advanced course in the aims and organization of the secondary school. Credit 2 hours. Second semester. Mr. Reed

252. SCHOOL ORGANIZATION—For superintendents and principals. National and state control of education. The county, township, city, district and consolidated district unit. School building, teaching, personnel, finances and statistical method. Credit 2 hours. Second semester. Mr. Taylor

EDUCATIONAL MEASUREMENTS AND RESEARCH

Professor Fordyce *(Chairman)*

281. MEASUREMENT AND EXPERIMENTAL EDUCATION—Consideration of the standards and scales for the measurement of educational achievements together with the experimental and statistical technique essential to applying these measures in teaching and supervision. Credit 2 hours. First semester. Mr. Fordyce

282. Measurement of Intelligence—Use of the various standardized group tests of mentality for measuring general intelligence and special abilities. Practical work in giving, scoring and interpreting these tests. Credit 2 hours. Second semester. Mr. Fordyce

283. School Surveys—The results of the principal surveys and the technique of conducting such surveys as the basis of field investigation. Students assigned a school system to study for a year, the results being embodied in a detailed report. Prerequisite: Courses 281 and 282. Credit 2 to 3 hours. First semester. Mr. Fordyce

284. School Surveys—Course 283 continued. Second semester.

285. Graduate Seminar—Study of recent educational literature and such educational problems as lend themselves to investigation in the organization and administration of public school systems and studies leading to theses and higher degrees in Education. Credit 1 or 2 hours. First semester. Mr. Fordyce

286. Graduate Seminar—Course 285 continued. Second semester.

287. Measurements in Elementary Education—Use of the individual tests for refining the results of the group tests of mentality in identifying those pupils who deviate from the norm in general intelligence. Prerequisite: Course 282. Credit 2 hours. First semester. Mr. Fordyce

288. Educational and Vocational Guidance—Determination of the mental levels and the specialized endowments required for the various classes of vocations together with an attempt to discover thru diagnostic measures those individual traits and the degree of intelligence which adapt one to some particular calling. Prerequisite: Course 287. Credit 2 hours. Second semester. Mr. Fordyce

Electrical Engineering

Professor Ferguson *(Chairman)*, Associate Professor Hollister, Assistant Professor Edison, Mr. Norris

COURSES

105. Direct Currents—Theory, operation and design of direct-current dynamos, circuits and apparatus. Prerequisite: Course 4. Credit 4 hours. First semester. Mr. Norris

106. Alternating Currents—Theory and operation of alternating-current dynamos, transformers, apparatus and systems. Prerequisite: Course 105. Credit 5 hours. Second semester. Mr. Norris

107. Alternating Currents—Continuation of Course 106, including problems of operation and design. Credit 3 hours. First semester. Mr. Hollister

116. Technical Reports—Preparation and presentation of reports upon technical subjects. Prerequisite: Course 106. Credit 2 hours. Second semester. Mr. Hollister

135. Electrical Laboratory—Practice in operating and testing direct-current generators, motors and other apparatus. Prerequisite: Course 4 and registration in Course 105. Laboratory 3 hours, credit 2. First semester. Mr. Edison

136. Electrical Laboratory—Continuation of Course 135, involving alternating-current apparatus. Prerequisite: Course 135 and registration in 106. Laboratory 4 hours, credit 3. Second semester. Mr. Edison

137. Electrical Laboratory—Continuation of Course 136, with more advanced practice and use of some special apparatus. Prerequisite: Course 136 and registration in 107. Laboratory 4 hours, credit 3. First semester. Mr. Edison

138. Advanced Alternating Currents—Continuation of Courses 107 and 137, with special correlated class and laboratory work. Attendance 2 hours, laboratory 3, credit 4. Second semester. Mr. Hollister

152. Electro-Chemical Engineering—Elements of electro-chemistry, with special emphasis placed upon some of the commercially most important processes, as metal-winning, furnaces, storage batteries, etc. Prerequisite: Courses 105 and 135. Credit 2 hours. Second semester. Mr. Ferguson

153. Engineering Problems—Engineering problems demanding a knowledge of algebra, trigonometry, calculus, vectors, mechanics, electrical phenomena, alternating-current circuits, etc. Prerequisite: Courses 106 and 136, Mathematics 4 and Physics 4. Credit 2 hours. First semester. Mr. Ferguson

154. Electric Railways—Preliminary estimates and economics, construction, equipment and operation. Prerequisite: Course 105. Credit 2 or 3 hours. Second semester. Mr. Ferguson

155. Electric Lighting and Illumination—Wiring codes, lighting apparatus and circuits, illumination and illuminating engineering. Prerequisite: For Electrical Engineers, Course 4 and Physics 4; for Architectural Engineers, Course 91 and Physics 4. Credit 3 hours. First semester. Mr. Edison

158. Electric Power Systems—Generation, transmission, distribution and utilization of power. Prerequisite: Courses 106 and 136. Credit 3 hours. Second semester. Mr. Edison

159. Telephone Engineering—Line construction, instruments, switchboards, systems, operation, etc. Prerequisite: Course 106. Credit 2 hours. First semester.

163. Radio-Communication—A fundamental course in theory and practice of radio-telegraphy and radio-telephony. Open to electrical engineering seniors, upon approval. Attendance and laboratory arranged, credit 2 or 3 hours. First semester. Mr. Ferguson

164. Radio-Communication—Continuation of Course 163, specializing in some phase of the work such as thermionic tubes, circuits, etc. Given only upon special arrangement. Credit 2 hours. Second semester. Mr. Ferguson

198. Electrical Laboratory—Similar to Course 135 but adapted to the

needs of the Agricultural, Architectural, Civil and Mechanical engineers. Prerequisite: Course 91. Laboratory 3 hours, credit 2. First semester. Mr. Edison

200. THESIS—For seniors, on approval. Credit 3 to 5 hours.

231. ELECTRICAL LABORATORY—Advanced investigations. Hours and credit to be arranged. First semester. Mr. Edison

232. ELECTRICAL LABORATORY—Course 231 continued. Second semester.

251. ALTERNATING CURRENTS—Transients, electric waves, etc. Credit 3 hours. First or second semester. Mr. Ferguson

261. ELECTRICAL DESIGN—Advanced electrical apparatus design. Credit 3 hours. First or second semester. Mr. Ferguson

300. GRADUATE THESIS.

ENGLISH

Professors Sherman *(Chairman)*, Frye, Fogg, Buck, Stuff, Pound, Gass, Associate Professor Scott, Assistant Professor McPhee

Courses leading to the Doctor's or Master's degree will be arranged on application to the Dean of the Graduate College and the professor concerned.

COURSES

107. ENGLISH COMPOSITION—Advanced course. Studies in the organization of literary material. Prerequisite: Courses 1 and 2. Credit 3 hours. First semester. Mr. Frye

108. ENGLISH COMPOSITION—Course 107 continued. Critical studies in style and structure. The tendencies of English prose, Classicism and Romanticism. Second semester.

121. AMERICAN LITERATURE—Its relation to the national life and thought. Lectures, collateral readings and reports. Credit 2 hours. First semester. Miss Pound

122. AMERICAN LITERATURE—Course 121 continued. Second semester.

123. SURVEY OF THE DEVELOPMENT OF ENGLISH LITERATURE—Periods of literary history, rise of literary forms, etc. Special class study Chaucer, Spenser and others. First semester. Miss Pound

124. SURVEY OF THE DEVELOPMENT OF ENGLISH LITERATURE—Course 123 continued. From Elizabethan times to the present. Second semester.

125. ENGLISH LITERATURE FROM SPENSER TO MILTON—Critical study of the writers from 1580 to 1674 exclusive of the drama. Credit 3 hours. First semester. Mr. Buck

126. ENGLISH LITERATURE FROM MILTON TO DRYDEN—Course 125 continued. Second semester.

127. EIGHTEENTH CENTURY LITERATURE—From Dryden to Johnson. Credit 3 hours. First semester. Mr. Frye

128. EIGHTEENTH CENTURY LITERATURE—Course 127 continued. Second semester.

129. ENGLISH LYRIC POETRY—Nature of the lyric. Survey of leading lyric kinds and types; ballads, sonnets, odes, elegies, etc. History of the English lyric. Credit 2 hours. First semester. Miss Pound

131. NINETEENTH CENTURY ENGLISH POETS—English poets from 1798 to 1900. The romantic movement of the early nineteenth century. The Victorian period. Preliminary completion of Courses 123 and 124 tho desirable is not essential. Credit 2 hours. First semester. Miss Pound

132. NINETEENTH CENTURY ENGLISH POETS—Course 131 continued. Second semester.

133. JOB—A comparative study of literature in English. Prerequisite: Courses 21 and 22. Credit 2 hours. First semester. Mr. Stuff

134. THE GOSPELS AS LITERATURE—Comparative studies from other literatures. Prerequisite: Courses 21 and 22. Credit 2 hours. Second semester. Mr. Stuff

135. SHAKESPEARE—Analysis of the literary art of this author. Hamlet studied in daily written exercises and library readings, with independent investigations of special topics on the art and literary history of the play. Credit 3 hours. First semester. Mr. Scott

136. SHAKESPEARE—Course 135 continued. Written studies in selected plays of Shakespeare. Second semester.

137. BROWNING—Written studies of *Luria, Return of the Druses, Pippa Passes*. Prerequisite: Courses 21 and 22. Credit 2 hours. First semester. Mr. Sherman

138. BROWNING—Course 137 continued. *The Ring and the Book, Sordello*. Second semester.

139. THE NOVEL—Its relation to the expression of life. Study of modes and art principles in the interpretation of life. Prerequisite: Courses 21 and 22. Credit 2 hours. First semester. Mr. Stuff

140. THE NOVEL—Course 139 continued. Second semester.

141. SHAKESPEARE—Advanced studies in dramatic art, as represented in *Cymbeline, The Winter's Tale, Coriolanus*. Prerequisite: Courses 21 and 22. Credit 2 hours. First semester. Mr. Sherman

142. SHAKESPEARE—Course 141 continued. *Romeo and Juliet, Twelfth Night, King Lear*. Second semester.

151. STUDY OF THE DEVELOPMENT AND OF PRESENT TENDENCIES IN

English Prose—Prerequisite: Courses 21 and 22. Credit 2 hours. First semester. Mr. Sherman

152. Development of Modern Prose—Course 151 continued. Second semester.

153. Theories of Style—A discussion of the ideas of Matthew Arnold, Pater, DeQuincey and their predecessors on the subject of prose style. Prerequisite: Courses 1 and 2. Credit 2 hours. First semester. Mr. Gass

154. Theories of Style—Course 153 continued. Second semester.

155. The Nineteenth Century Essay—A critical course based upon selected works of masters of modern English prose—Jeffrey, Hazlitt, Macauley, Lamb, DeQuincey, Carlyle, Ruskin, Arnold, Newman and Stevenson. Prerequisite: Courses 1 and 2. Credit 2 hours. First semester. Mr. Fogg

156. The Nineteenth Century Essay—Course 155 continued. Second semester.

157. Contemporary Drama—Studies in the construction and criticism of the modern play. Admission on approval of instructor. Credit 2 or 3 hours. First semester. Mr. Scott

158. Contemporary Drama and Fiction—Course 157 continued. Second semester.

171. Essentials of Old English: Outline of Old English Grammar—Reading at earliest moment of prose and poetic specimens. Introductory to the history of the English language and the history of Old English literature. Credit 3 hours. First semester. Miss Pound

172. Old and Middle English and History of the English Language—Course 171 continued. The development of the language traced from Old to Modern English, the history of inflections, sound changes, spelling, etc. Reading of selected Middle English texts before Chaucer. Credit 3 hours. Second semester. Miss Pound

201. Comparative Criticism—Course 108 continued. Critical appreciation of literature. A reading knowledge of French is indispensable. Admission by consent of the instructor. Credit 3 hours. First semester. Mr. Frye

202. Comparative Criticism—Course 201 continued. Second semester.

203. Seminary in Criticism—Credit 2 hours. First semester. Mr. Sherman

204. Seminary in Present Literary Forms and Tendencies—Credit 2 hours. Second semester. Mr. Sherman

214. Chaucer—Literary and linguistic studies. Informal lectures on contemporary fourteenth century life and literature. Credit 2 hours. Second semester. Miss Pound

215. Celtic Sentiment and Thought in Its Relation to English Literature—A survey of early Irish and Welsh literature with special study of the Arthurian sources. Admission on consent of the instructor. Credit 2 hours. First semester. Mr. Stuff

216. Celtic Sentiment—Course 215 continued. Second semester.

217. The Bibliography and Methods of Literary History—Credit 2 hours. Mr. Scott

219. Modes and Forms of Literary Treatment—The novel and the drama and grounds for choice between these. Credit 2 hours. First semester. Mr. Sherman

220. Various Forms and Modes of Poetic Handling of Proper Themes—Course 219 continued. Second semester.

221. Advanced Old English—Open to students who have a working knowledge of the language. The special mode of study varies according to the needs or equipment of the class. Serves often as an introduction to comparative Teutonic philology. Credit 2 hours. First semester. Miss Pound

222. Advanced Old English—Course 221 continued. Second semester.

223. Early Irish: Grammar—Interpretation of Old and Middle Irish texts. Credit 3 hours. First semester. Mr. Scott

224. Early Irish: Grammar—Course 223 continued. Second semester.

Entomology

Professors Swenk *(Chairman)*, Bruner

The department maintains a laboratory equipped for the use of students engaged in research work along systematic lines, and an insectary provided with apparatus for those investigating the life-histories of insects. A reference collection of insects numbering approximately 300,000 pinned specimens is available for study by advanced students. It contains many specimens named by specialists, including a considerable number of their types. While the greater portion of the collection is representative of our state and national fauna, it is also rich in exotic material from Argentina, Costa Rica, Mexico and the Philippine Islands. The departmental library contains practically complete files of all the American and the principal foreign entomological periodicals as well as most of the special monographs in the various orders, and is readily accessible to advanced students, while the economic libraries of the State Entomologist and Nebraska Experiment Station are close at hand and available for reference. The results of studies carried on in the department are issued consecutively in a numbered series.

COURSES

(These courses may be registered for repeatedly until the completion of the problem.)

15. Research in Systematic Entomology—Independent studies leading to the monographing of some genus, subfamily or family of insects or the detailed study of the insect fauna of Nebraska in one of the larger groups. First semester. Mr. Swenk

16. Research in Systematic Entomology—Course 15 continued. Second semester.

17. Research in Economic Entomology—Individual investigation of some special problem of economic entomology, usually the monographing of a species or group of species of economic importance. First semester. Mr. Swenk

18. Research in Economic Entomology—Course 17 continued. Second semester.

Geology and Geography

Professors Barbour *(Chairman)*, Bengtson, Schramm, Associate Professor Webster

The courses in this department are wholly elective. Courses leading to advanced degrees are arranged, on consultation, to meet the needs of candidates.

History

Professors Jones *(Chairman)*, Caldwell, Fling, Associate Professors Pfeiffer, Cochran, Assistant Professors Reynoldson, McFayden

The Degree of Master of Arts—The candidate for a Master's degree in history must have completed an undergraduate major in this University or its equivalent elsewhere, including two hours of historical research. The degree may be taken in the field of American, English or European history. An accurate and comprehensive knowledge of the chosen field will be required and a thesis based on the sources. The thesis may be written under the supervision of any member of the department.

For those desiring a minor in history, courses will be arranged in consultation with the candidate's major adviser.

The Degree of Doctor of Philosophy—The thesis for this degree in English or European history must be based at least in part upon research in European archives.

COURSES

201. Seminar in Ancient History—Credit to be arranged. First semester. Mr. McFayden

202. Seminar in Ancient History—Course 201 continued. Second semester.

217. The French Revolution—The constituent assembly. Credit 1 hour. First semester. Mr. Fling

218. The French Revolution—Course 217 continued. Second semester.

219. Seminar on the Constituent Assembly—Credit 1 hour. First semester. Mr. Fling

220. Seminar on the Constituent Assembly—Course 219 continued. Second semester.

222. History of the Legislative Assembly—Credit 1 hour. Second semester. Miss Pfeiffer

227. Historical Method—Lecture on the problems of historical research and construction, accompanied by readings in English, French and German monographs. Credit 1 hour. First semester. Mr. Fling

228. Historical Method—Course 227 continued. Second semester.

231. Seminar in English History—Credit 2 hours. First semester. Mr. Jones

232. Seminar in English History—Course 231 continued. Second semester.

241. Seminar in American History—For graduate students and those who may be admitted to the course by the instructor. Credit will vary with the amount and character of the student's work. First semester. Mr. Cochran

242. Seminar in American History—Course 241 continued. Second semester.

243. Graduate Conference in American History—Meeting of professors, fellows, scholars and graduate students in American History for discussion of professional and technical subjects, book reviews, methods, etc. First semester.

244. Graduate Conference in American History—Course 243 continued. Second semester.

Home Economics

Professor Fedde *(Chairman)*, Assistant Professor Stewart

Preparation for the graduate courses below must be discussed and determined with instructors before registration is effected.

COURSES

244. Advanced Problems in Food Study—Lectures, conferences, library and laboratory work on problems in the preservation and preparation of food. Prerequisite: Bacteriology 101, Chemistry, H. E. 41 and 42. Credit 3 to 4 hours. First or second semester.

245. Dietetics—Additional reference and conference work with individual problems in the study of actual dietaries and the planning of dietaries to meet

various needs. Prerequisite or parallel: Course 141. Credit 2 to 4 hours. First or second semester.

Horticulture

Professor Howard *(Chairman)*, Associate Professors Hood, Wiggans, Werner

Students desiring graduate instruction in this department should consult the chairman of the department before registering.

COURSES

7. Horticultural Problems—Assigned problems in Horticulture. Experimental work in the laboratory, gardens, greenhouses or orchards; planning experiments and keeping records. Hours for consultation. Credit 2 to 5 hours. Registration only by permission of instructors. First semester. Staff

8. Horticultural Problems—Course 7 continued. Second semester.

10. Potato Production—Cultural practices under dry land and irrigated conditions. Seed production, disease and insect control, harvesting, grading and storage. Credit 2 hours. Second semester. Mr. Werner, Mr. Howard

11. Advanced Vegetable Growing—A systematic study of commercial truck gardening. Prerequisite: Course 1 and Botany 1 and 2. Open to juniors and seniors. Laboratory 3 hours, credit 3. First semester. Mr. Hood

12. Advanced Vegetable Growing—Course 11 continued. Second semester.

19. Packing and Handling Fruit—A course dealing with problems of packing, storing and marketing fruit, selection of exhibition fruit and fruit judging. Course 15 should precede this course. Laboratory 6 hours, credit 3. First semester. Mr. Wiggans

25. Principles of Plant Breeding—An elementary study of the principles underlying plant improvement. Prerequisite: Zoology 141 or 142 or by permission. Credit 2 hours. First semester. Mr. Howard

27. Special Methods of Teaching Horticulture—Adaptation to secondary school conditions. Equipment and supplementary literature. Horticultural problems of the high school agricultural instructor. Prerequisite: Courses 1 and 2. Credit 2 hours. First semester. Mr. Hood

Mathematics

Professors Candy *(Chairman)*, Engberg, Brenke, Associate Professors Gaba, Congdon, Mr. Pierce

Prerequisite: The courses constituting the major in mathematics are prerequisite for all graduate work.

Master of Arts—Candidates for the degree A.M. who major in mathematics must complete 30 hours beyond that constituting the major and present a

thesis equivalent to not less than 6 credit hours; at least 18 hours must be in mathematics and the rest in physics, astronomy or philosophy.

DOCTOR OF PHILOSOPHY—The candidate must have an extended general knowledge of mathematics and must devote special attention to some line of modern research.

SEMINAR—The instructors and advanced students meet twice each month for the discussion of current literature and the presentation of the results of investigations.

COURSES

103. DIFFERENTIAL EQUATIONS—Prerequisite: Course 4 or 16. Credit 3 hours. First semester. Mr. Candy

104. DIFFERENTIAL EQUATIONS—Course 103 continued. Second semester.

111. ADVANCED PLANE ANALYTICS—Prerequisite: Course 4 or 16. Credit 3 hours. First semester. Mr. Candy

112. ADVANCED SOLID ANALYTICS—Course 111 continued. Second semester.

113. PROJECTIVE GEOMETRY—Prerequisite: Course 2 or 13. Credit 2 or 3 hours. First semester. Mr. Gaba

114. PROJECTIVE GEOMETRY—Course 113 continued. Second semester.

115. HIGHER PLANE CURVES—Prerequisite: Course 111. Credit 3 hours.

116. HIGHER GEOMETRY—Prerequisite: Course 111. Credit 3 hours.

121. HIGHER ALGEBRA—Prerequisite: Courses 2 or 13 and 21. Credit 3 hours. First semester. Mr. Pierce

122. HIGHER ALGEBRA—Course 121 continued. Second semester.

123. THEORY OF EQUATIONS—Prerequisite: Courses 15 and 21. Credit 2 hours. Mr. Gaba

125. DETERMINANTS—Prerequisite: Course 21. Credit 3 hours.

131. DIFFERENCES AND INTERPOLATION—Prerequisite: Course 4 or 16. Credit 2 hours.

132. DIFFERENCE EQUATIONS—Prerequisite: Course 4 or 16. Credit 2 hours.

133. THEORY OF PROBABILITY—Prerequisite: Course 4 or 16. Credit 2 hours. Mr. Engberg

150. FUNCTIONS OF A REAL VARIABLE—Prerequisite: Course 4 or 16. Credit 3 hours. First semester. Mr. Brenke

151. FUNCTIONS OF A REAL VARIABLE—Course 150 continued. Second semester.

152. INFINITE SERIES AND PRODUCTS—Prerequisite: Course 4 or 16. Credit 3 hours. Mr. Brenke

202. LIE THEORY OF DIFFERENTIAL EQUATIONS.

203. Continuous Groups.
211. Theory of Numbers.—First semester. Mr. Pierce
212. Theory of Numbers—Second semester. Mr. Pierce
221. Functions of a Complex Variable—First semester. Mr. Brenke
222. Functions of a Complex Variable—Second semester. Mr. Brenke
231. Mathematical Analysis. Mr. Brenke
235. Elliptic Functions.
242. Functions of Infinitely Many Variables.
243. Finite Groups.
245. Galois Theory of Equations.
251. Partial Differential Equations of Physics. Mr. Brenke
253. Harmonic Analysis.
261. Differential Geometry—First semester. Mr. Pierce
262. Differential Geometry—Second semester.
271. Theory of Aggregates. Mr. Gaba
281. Calculus of Variations. Mr. Brenke
282. Vector Analysis. Mr. Gaba
283. Integral Equations.
284. Generalized Co-ordinates.
291. Reading Course in Mathematics.

Mechanical Engineering

Professor DeBaufre *(Chairman)*, Associate Professor Haney, Assistant Professors Bunting, Luebs

COURSES

107. Machine Tool Practice—Principles and processes of machine shop practice for the production of machine parts. Prerequisite: Courses 3 and 4. Recitation 1 hour, laboratory 7, credit 3. First semester. Mr. Sjogren

108. Machine Shop Methods—Advanced machine tool practice; design of tools, jigs and fixtures; quantity production under modern manufacturing methods. Prerequisite: Course 107. Recitation 1 hour, laboratory 7, credit 3. Second semester. Mr. Sjogren

110. Power Engineering—Sources of heat and power; steam boilers, engines, turbines and their auxiliaries; gas producers; internal combustion engines. Prerequisite: Mathematics 4, Chemistry 4 and Physics 4. Credit 4 hours. First and second semesters. Mr. Haney, Mr. Luebs

111. Power Laboratory—Calibration of instruments; determination of coefficients for flow of water thru pipes. orifices, nozzles and Venturi tubes and over weirs; experimental determinations of steam quality; flue gas analysis; valve setting; economy tests of boilers, engines, etc. Prerequisite or parallel: Course 110. Lecture 1 hour, laboratory 8, credit 3. First and second semesters.

Mr. Haney, Mr. Luebs, Mr. Booth

113. Thermodynamics—Study of the properties of gases and vapors and the application of the fundamental laws to the combustion of fuels, the steam engine and turbine, the internal combustion engine, the compressor and the flow of fluids. Prerequisite: Courses 110 and 111. Credit 4 hours. Second semester.

Mr. DeBaufre

114. Heaters and Coolers—Study of the performance of evaporators, condensers, feed water heaters, lubricating oil coolers, cooling towers, etc.; refrigerating machinery. Prerequisite: Course 113. Credit 2 hours. First semester.

Mr. DeBaufre

115. Fuel and Lubricant Laboratory—Heating value determinations and proximate analyses of coals; measurement of viscosity, fire point, flash point, etc., of oils; theories of combustion and of lubrication. Prerequisite: Chemistry 2 or 4. Attendance 1 hour, laboratory 4, credit 2. Second semester. Mr. DeBaufre

117. Pumps and Compressors—Theory and design of reciprocating and rotary pumps, piston and centrifugal compressors, fans and blowers. Prerequisite: Course 113. Credit 2 hours. First semester. Mr. DeBaufre

118. Heating, Ventilation and Sanitation—Theory and design of systems for heating and ventilating buildings; water and gas supply; drainage, sewage and waste disposal for city and country homes, office buildings and factories. Prerequisite: Course 110. Credit 3 hours. Second semester. Mr. Luebs

119. Steam Boilers and Turbines—Theory and design of steam boilers and turbines; A.S.M.E. boiler code. Prerequisite: Course 113. Credit 3 hours. First semester. Mr. Haney

120. Power Plant Design—Designs and specifications for steam engine, internal combustion engine and hydraulic power plants; experimental analyses of performance; a complete power plant is laid out and estimates made of cost. Prerequisite: Course 110. Credit 3. Second semester. Mr. Haney

122. Internal Combustion Engines—Theory and design of gas, gasoline, kerosene and crude oil engines and of automobile, airplane and motor-boat engines. Prerequisite: Course 113. Credit 2 hours. First semester. Mr. Haney

126. Aeronautic Design—Theory and design of airplanes and dirigibles; air propellers. Prerequisite: A. M. 106 and 116. Credit 2 hours. Second semester. Mr. Haney

127. Advanced Power Laboratory—Investigations of the performance of pumps, compressors, blowers, refrigerating machinery, steam boilers, steam turbines and internal combustion engines. Prerequisite: Courses 110, 111 and 113. Laboratory 4 hours, lecture 1, credit 3. First semester.
Mr. Haney, Mr. Luebs, Mr. Booth

130. Metallography—Heat treatment and microscopical analysis of iron and non-ferrous alloys and the effects of manufacturing operations upon the metallographic structure. Prerequisite: Chemistry 2 or 4. Attendance 1 hour, laboratory 4, credit 2. First semester. Mr. DeBaufre

135. Shop Management—Industrial organization; planning, routing, time studies, wage payment systems, shop economics. Prerequisite: Course 108. Credit 2 hours. First semester. Mr. Sjogren

136. Management Engineering—Inventions, patents, research, development and production; location and construction of factories; purchasing and storing materials; hoisting and conveying machinery; equipment; power transmission; handling men. Prerequisite: Course 135. Credit 2 hours. Second semester.
Mr. DeBaufre

200. Thesis—For seniors, on approval. Credit 3 to 5 hours.

251. Laboratory Investigations—Special investigations and reports relating to steam boilers, steam engines and turbines, internal combustion engines, heating and ventilating, refrigeration, hydraulic machinery, heat transmission, metallography, etc. Mr. DeBaufre, Mr. Haney, Mr. Luebs

252. Laboratory Investigations—Course 251 continued.

255. Advanced Design—Advanced study of design of steam boilers, steam engines and turbines, internal combustion engines, heating and ventilating apparatus, refrigeration machinery, hydraulic machinery, heat transmission apparatus, etc.
Mr. DeBaufre, Mr. Haney, Mr. Luebs

256. Advanced Design—Course 255 continued.

261. Advanced Thermodynamics—Advanced study of the theory and applications of thermodynamics. Mr. DeBaufre

262. Advanced Thermodynamics—Course 261 continued.

265. Industrial Engineering—Study of a particular industry with reference to location, buildings, heating and ventilating, power and lighting, equipment, sources of raw materials, processes and organizations. Mr. DeBaufre, Mr. Sjogren

266. Industrial Engineering—Course 265 continued.

300. Graduate Thesis.

Modern Languages

Professors Conklin *(Chairman)*, Fossler Warshaw, Vaughan, (Heppner), Associate Professors Reese, Alexis, (Assistant Professor Stepanek)

An A.B. or equivalent with a major in a Modern Language is prerequisite. In addition to the thesis the work for the degree of A.M. consists of a minimum of 18 hours, of which not more than one-third may be chosen from the Senior Division.

COURSES

FRENCH

219. Sixteenth Century Literature—Rabelais, Montaigne, La Pleiade. Credit 2 hours. First semester. Miss Conklin

220. Sixteenth Century Literature—Course 219 continued. Second semester.

221. Old French—*Chansons de Gestes*, chronicles and lyrics. Credit 2 hours. First semester. Miss Conklin

222. Old French—Course 221 continued. Second semester.

223. French Philology—Historical French grammar, phonetical analysis of French words. Credit 1 hour. First semester. Miss Conklin

224. French Philology—Course 223 continued. Second semester.

225. General Romance Philology—A comparative study of the development of the various Romance Languages including Rumanian, Italian, French, Provencal, Spanish, Catalan and Portuguese. This course presupposes a knowledge of Latin, Old French, German and advanced study in at least two Romance Languages. Credit 2 hours. First semester. Mr. Vaughan

226. General Romance Philology—Course 225 continued. Second semester.

227. Provencal—Credit 2 hours. First semester. Mr. Vaughan

228. Provencal—Course 227 continued. Second semester.

GERMAN

283. Gothic—Grammar and readings. The language, with respect to its phonology, etymological connections, inflectional system and basic relation to the other Germanic dialects. Credit 3 hours. First semester. Mr. Fossler

284. Comparative Germanic Philology—Fundamental principles of linguistic science, with special reference to the prehistoric relationship and historical development and differentiation of English and German. Credit 3 hours. Second semester. Mr. Fossler

ITALIAN

142. Modern Authors and the Cinquecento—Readings from such writers as Goldoni, Fogazzaro, Verga, Macchiavelli, Ariosto, Tasso. Prerequisite: Course 141. Credit 3 hours. Second semester. Mr. Vaughan

243. Dante—The *Vita Nuova* and the *Divine Comedy*. Prerequisite: Course 142. Credit 3 hours. First semester. Mr. Vaughan

244. Dante—Course 243 continued. Second semester.

245. Advanced Composition and Conversation—Prerequisite: Course 142. This course may be taken together with 243. Credit 2 hours. First semester. *(Not given in 1922-23.)* Mr. Vaughan

246. Advanced Composition and Conversation—Course 245 continued. Second semester. *(Not given in 1922-23.)*

SPANISH

265. Seminary in Spanish—Intensive study of some noteworthy man of letters, such as Lope de Vega or Calderon, or of some special phase of Spanish or Spanish-American literature, such as The Lyric Poets, The Romantic School, etc. Conferences, discussions, reports. Credit to be arranged. First semester. Mr. Warshaw

266. Seminary in Spanish—Course 265 continued. Second semester.

Pharmacy

Professors Lyman *(Chairman)*, Schneider

Graduate work in pharmacy, pharmacognosy and pharmaceutical microbiology is open to those students who have completed the undergraduate or equivalent courses described in these subjects, and who have had sufficient training in the related branches and in the languages. Work leading to the degrees of Master of Arts and Doctor of Philosophy must be of such a type as to merit publication in the standard journals. The time necessary in each case is that required by the Graduate College. Candidates will consult the research instructors under whom the work is to be done before registering.

COURSES

201. Drug Plant Culture—Seed germination and seed treatment tests. The root symbionts of the more important medicinal plants. Selective propagation. Developing the active constituents of medicinal plants. Climatological factors. Special fertilizers. Mr. Schneider

202. Commercial Pharmacognosy—The commercial sources of crude drugs. The law of supply and demand. Competition. Adulteration of drugs. Protective tariff vs free trade. Quality and purity of drugs. Mr. Schneider

203. Microanalytical Methods—A critical study and comparison of the methods in use, qualitative as well as quantitative, as a preliminary to the development of one or more of the methods, or the formulation of a new or substitute method. Mr. Schneider

204. Standardization of Disinfectants—A critical study of the methods now in use with a view to the formulation of a simplified substitute method. Mr. Schneider

205. Problems in Pharmaceutical Sanitation—Drug store sanitation. Soda-fountain sanitation. Microbial contaminants of pharmaceuticals. Prescription counter sanitation. Sanitation of face powders, dusting powders, etc. Mr. Schneider

206. Microanalytical Methods in Toxicology—The relationship of the microanalytical and chemical methods in toxicology. The equipment and the laboratory and field methods. Assignment and investigation of special problems. Mr. Schneider

Philosophy

Professors Alexander *(Chairman)*, Hinman, Hyde, Associate Professor Gray

Master of Arts—The earning of a Master of Arts' degree in Philosophy represents at least two semesters of resident study. Work counting toward this degree may be chosen from any of the courses offered by the Department in the Senior Division or in the Graduate College. From twenty to forty per cent of the necessary credits may be earned by thesis.

Doctor of Philosophy—The earning of the degree of Doctor of Philosophy in philosophy normally represents at least six semesters of study, not less than two of which must be at the University of Nebraska, in residence. The work, including the choice of a Minor, must be under the direction of the candidate's adviser chosen from the faculty of the Department. From twenty to forty per cent of the necessary credit may be earned by thesis.

Graduate Minor—A graduate minor in philosophy should comprise at least twenty-five per cent of the total requirement for the degree sought.

COURSES

201. History of Psychology—Review of the history of psychological science. Credit 2 hours. First semester. Miss Hyde

202. Psychological Literature—Intensive study of psychological texts, chosen to suit. Credit 2 hours. Second semester. Miss Hyde

230. Philosophical Themes—Library work and conferences. Prerequisite: Course 130 or equivalent. Credit 1 to 3 hours. Mr. Hinman

251. Advanced Studies in the History of Philosophy—For graduates

and qualified seniors. Prerequisite: Courses 151 and 152. Credit 2 hours. First semester. Mr. Alexander

252. Advanced Studies in the History of Philosophy—Course 251 continued. Second semester.

253. Seminar—Individual conferences for students working in Oriental languages, civilizations, philosophies and religions. Entrance by permission. Credit 2 to 6 hours. First semester. Mr. Gray

254. Seminar—Course 253 continued. Second semester.

271. Departmental Seminary—Papers and discussions, by graduate students meeting with the teaching staff of the department. All candidates majoring in philosophy are expected to attend.

272. Thesis Conference—Each candidate for a higher degree is expected to hold conferences, as arranged, with the professor under whose supervision the thesis is being prepared. Amount of credit is determined by the department.

Physics

Professors Marvin *(Chairman)*, Almy, Moore, T. T. Smith

Instruction for graduate students is offered in both theoretical and experimental physics. Courses 201 to 204 dealing with the basic theory of the science are given in a sequence of four semesters. Other courses, dealing with special topics, will be offered as occasion may demand.

The department has excellent equipment for research in certain lines and experimental research is especially encouraged. For the degree of Master of Arts, at least one full year of work in graduate courses in physics is required; a completed research is highly desirable, tho not a requirement. A minor in a related subject (astronomy, chemistry, electrical engineering or mathematics) is advisable.

COURSES

201. Dynamics—Formal development of the dynamical principles of d'Alembert, Lagrange, Hamilton and Euler, with applications and an introduction to the theory of relativity. Alternate years; offered 1922-23. Credit 4 hours. First semester. Mr. Marvin

202. Electro-Magnetic Theory of Light—Explanation of the optical properties of transparent and absorbing isotropic and crystalline media, dispersion, optical activity, the Faraday and Zeeman effects and the Kerr magneto-optic and electro-optic effects. Alternate years; offered 1923-24. Credit 4 hours. Second semester. Mr. Marvin

203. Electricity and Magnetism—The general theory of electricity and magnetism and electro-magnetic phenomena, with applications. Alternate years; offered in 1923-24. Credit 4 hours. First semester. Mr. Smith

204. Radiation and the Quantum Theory—The entropy principle and its application to radiation; the Wien-Planck radiation laws; the quantum hypothesis and recent developments from it. Alternate years; offered 1922-23. Credit 4 hours. Second semester. Mr. Almy

211-12. Research—Original investigation of a problem in experimental physics. No time limitation imposed, but not less than fifteen hours per week is advisable. Mr. Almy, Mr. Marvin, Mr. Moore, Mr. Smith

Physics Colloquium—Instructors and graduate students meet weekly for the presentation of reports upon the progress of their investigations and reviews of the current periodicals.

Physiology and Pharmacology

Professors Lyman *(Chairman)*, Schneider

Graduate work in physiology and pharmacology is open to those students who have completed Courses 101 and 102 (or 103), 114 and 132 or courses representing an equivalent amount of training, and who have had sufficient training in related branches and in the languages. Work leading to the degrees of Master of Arts and Doctor of Philosophy must be research work of such a type as to merit publication in the standard journals. The time necessary in each case is that required by the Graduate College. Candidates will consult with the chairman of the department before registering.

COURSES

201. Problems in Tolerance. Mr. Lyman

202. Problems in the Antagonistic and Synergistic Action of Drugs. Mr. Lyman

203. Problems in the Treatment of Poisons. Mr. Lyman

204. Problems in the Effect of the Habit-Producing Drugs Upon Nutrition. Mr. Lyman

Political Science and Sociology

Professors Howard, Webster, Aylsworth, Associate Professors Senning *(Chairman)*, Williams, Assistant Professors Noble, Boots

The requirement for the degree of Master of Arts is one full year's graduate work, or the equivalent of thirty hours, including a thesis. The candidate may devote his entire time to the work of the department; or he may divide it between a major and a minor. A minor is the equivalent of nine hours. Selection of the courses is influenced by the character of the thesis subject.

COURSES

227. Seminar in Sociology—Credit 2 hours. First semester. Mrs. Williams

228. SEMINAR IN SOCIOLOGY—Second semester.

231. RESEARCH COURSE IN SOCIAL ANTHROPOLOGY—Students desiring to undertake special investigation in social anthropology will be guided in the selection of subjects, the use of the appropriate literature and the preparation of their research for publication. Credit 1 hour. First semester. Mr. Webster

232. RESEARCH COURSE IN SOCIAL ANTHROPOLOGY—Course 231 continued. Second semester.

251. SEMINAR IN PROBLEMS OF POLITICS—Credit 2 hours. First semester. Mr. Aylsworth

252. SEMINAR IN PROBLEMS OF POLITICS—Course 251 continued. Second semester.

253. SEMINAR IN PROBLEMS OF PUBLIC ADMINISTRATION—Credit 2 hours. First semester. Mr. Senning

254. SEMINAR IN PROBLEMS OF PUBLIC ADMINISTRATION—Course 253 continued. Second semester.

255. SEMINAR IN INTERNATIONAL LAW AND DIPLOMACY—Credit 1 hour. First semester. Mr. Noble

256. SEMINAR IN INTERNATIONAL LAW AND DIPLOMACY—Course 255 continued. Second semester.

Students desiring to take Courses 251-256 should consult instructor.

257. CONTEMPORARY POLITICAL THOUGHT—A survey course of reading and round table discussion for students having high standing in six or more hours of political science. Credit 1 hour. First semester. Mr. Boots and others

258. CONTEMPORARY POLITICAL THOUGHT—Course 257 continued. Second semester.

RURAL ECONOMICS

Professor Filley *(Chairman)*, Associate Professor Rankin

Students wishing to enter the graduate courses below should consult instructor before registration.

COURSES

7. FARM MANAGEMENT SURVEY—Prerequisite: Courses 3 and 4. Field work, tabulation and analysis of data. Field work may be done during vacation. Admission by consent of the instructor. Credit 1 to 5 hours. First semester. Mr. Filley

8. FARM MANAGEMENT SURVEY—Course 7 continued. Second semester.

19. RURAL SOCIOLOGY SEMINAR—Instruction in methods of gathering and organizing data in the field of rural sociology, followed by individual reports of

work done by the student reporting. Admission by consent of the instructor. Credit to be arranged. First semester. Mr. Rankin

20. RURAL SOCIOLOGY SEMINAR—Course 19 continued. Second semester.

ZOOLOGY

Professors Wolcott *(Chairman)*, Barker, Whitney, Latimer, Instructor Powers

Graduate students must consult with the chairman of the department in regard to scholarships or fellowships and also with respect to registration, even tho their work may actually be done under the immediate direction of another member of the staff.

MASTER OF ARTS

Candidates for the degree of Master of Arts must have completed two years of undergraduate work in zoology and one in botany. The usual requirements are as follows:

MINOR: An amount of advanced work equivalent to 6 credit hours and seminar work for one semester.

MAJOR: An amount of advanced work equivalent to 12 credit hours, a simple thesis and assigned reading, including seminar work thruout the year.

COMPLETE COURSE: Work equivalent to full time for one year including reading and seminar work, and an acceptable thesis.

DOCTOR OF PHILOSOPHY

Preparation the same as for the Master's degree. The requirements are:

MINOR: An amount of work approximating that of the complete course for the degree of Master of Arts.

MAJOR: A course of graduate study which shall meet the minimum time requirement of the Graduate College; the preparation of a thesis which shall represent original research, and three years of seminar work.

COURSES

201. SEMINAR—Review of recent literature and reports on research. Open to advanced students and required of candidates for advanced degrees. Credit 1 hour. May be elected more than once. First or second semester.

Department Staff

203. RESEARCH—For graduate students only; lines of investigation open:

a. Morphology of the mites; investigations on the local fauna. Mr. Wolcott
b. Problems dealing with the parasitic protozoa and worms. Mr. Barker
c. Problems in heredity and sex-determination. Mr. Whitney
d. Morphology of the vertebrate nervous system. Mr. Latimer
e. Problems in ecology. Mr. Powers

GRADUATE STUDENTS IN 1921-1922

Candidates for the Degree of Doctor of Philosophy

Andersen, Emma Nathalia.....Lincoln
A. B. 1910, A. M. 1913, The University of Nebraska
Botany

Arenson Saul Bryan .....Lincoln
Ph.C. 1916, B.Sc. 1917, A.M. 1918, The University of Nebraska
Chemistry, Geology

Arsove, George Marieve.....University Place
A.B. 1916, Syracuse University; A.M. 1918, Harvard University
History

Beber, Meyer .....Omaha
B.Sc. 1920, The University of Nebraska
Chemistry, Physics

Benson, Clement L. .....College View
A.B. 1905, Union College; A.M. 1921, The University of Nebraska
History, Political Science

Bishop, Edward Charles.....Bradshaw
B.Sc. 1906, Nebr. Wesleyan University; A.M. 1909, The University of Nebraska—Education

Clark, Letta May.....University Place
A.B. 1905, Nebr. Wesleyan University; A.M. 1913, The University of Nebraska—English, Education

Colburn, Dorothy Jane.....Lincoln
A.B. 1919, A.M. 1921, The University of Nebraska
History

Crist, John William.....University Place
A.B. 1919, A.M. 1920, Nebraska Wesleyan University
Botany, Chemistry, Agronomy

Gordon, Tobie Agnes.....Lincoln
A.B. 1906, A.M. 1921, The University of Nebraska
Modern Languages

Hendricks, Bernard Clifford.....Lincoln
B.E. 1909, Peru State Normal; B.Sc. 1911, M.Sc. 1914, University of Chicago—Chemistry, Physics

Herron, Louise Loretz.....Nashville, Tenn.
B.Sc. 1917, Vanderbilt University; A.M. 1920, Columbia University
History

Hilton, John William.....Bethany
A.B. 1898, Cotner University; A.M. 1903, The University of Nebraska
Philosophy, Political Science and Sociology

Howie, Ethel Lee.....Lincoln
A.B. 1906, A.M. 1914, The University of Nebraska
History, English

Jeffrey, Harry Roland.....Lincoln
A.B. 1918, Cotner University; A.M. 1921, The University of Nebraska
English, Modern Languages

Johnson, Emily Adeline.....College View
A.B. 1908, Union College; A.M. 1922, The University of Nebraska
English, Education

Keim, Franklin David.....Lincoln
B.Sc. 1914, M.Sc. 1919, The University of Nebraska
Agronomy

Link, John Thomas.....Seward
A.B. 1919, A.M. 1920, The University of Nebraska
Geology and Conservation

McRae, Glenn .....Bethany
A.B. 1918, Cotner University; A.M. 1921, The University of Nebraska
History

Machetzki, Paul Otto.....Lincoln
A.B. 1915, Midland College; A.M. 1921, The University of Nebraska
Modern Languages

Mellenburch, Pearl Leslie.....Walton
A.B. 1917, Midland College; A.M. 1921, University of Kansas
Education, Philosophy, Political Science

Nedom, Henry Arthur.....Lincoln
B.Sc. 1921, The University of Nebraska
Geology and Geography, Chemistry

Obendorfer, Beulah.....Colorado Springs, Colo.
A.B. 1919, A.M. 1920, Colorado College
Botany, Zoology

Odell, Ruth.....Fullerton
A.B. 1914, University of Nebraska; A.M. 1920, Columbia University
English

Palmateer, Russell Eugene.....Creston
A.B. 1919, Nebraska Wesleyan University
Chemistry, Physics

Patterson, Charles Henry.....Lincoln
A.B. 1917, Washington Missionary College; A.M. 1921, The University of Nebraska—Philosophy

Power, Marschelle Harnly.....Lincoln
A.B. 1917, M.Sc. 1921, The University of Nebraska
Chemistry, Physics

Premer, Chancy Lloyd.....College View
A.B. 1915, Union College; A.M. 1918, The University of Nebraska
European History, Economics

Raub, Leo Gerard.....Lincoln
A.B. 1916, Oberlin College
Physics, Chemistry, Mathematics

Rosenlof, George Walter.....Pawnee City
B.Sc. 1916, Hastings College
Education

Ruyle, William Leroy.....University Place
A.B. 1912, Nebr. Wesleyan University; B.D. 1915, Garrett Bible Institute
Political Science and Sociology

Sands, Lila.....Lincoln
B.Sc. 1919, A.M. 1920, The University of Nebraska
Chemistry, Bacteriology

Saunders, Gifford William.....Thedford
A.B. 1917, York College
Education

Savin, William Homer.....Lincoln
B.Sc. 1917, University of Delaware; M.Sc. 1919, Iowa State College
Zoology

Schemel, Margaret Constance.....Lincoln
A.B. 1921, The University of Nebraska
Romance Languages

Schrank, Ernest Gustav Herman.....Lincoln
A.B. 1922, The University of Nebraska
Philosophy

Schreckengast, Joy Ruth.....University Place
A.B. 1912, Nebraska Wesleyan University
Modern Languages

Story, Leroy Granville.....Bloomington
A. B. 1919, Nebr. Wesleyan University; A.M. 1921, The University of Nebraska—Chemistry, Geology

Stribic, Frances Pauline.....Lincoln
A. B. 1920, A.M. 1921, The University of Nebraska
Mathematics, Physics

Sturmer, Anna Marie.....Manhattan, Kans.
A.B. 1917, A.M. 1920, The University of Nebraska
English, Education

Thiel, Albert Frederick.....Lincoln
A.B. 1916, University of Minnesota; A.M. 1917, University of Nebraska
Plant Pathology, Botany

Wagner, Ona Ruth.....Lincoln
A.B. 1915, A.M. 1920, The University of Nebraska
History

Weber, Chris Oliver.....Lincoln
A.B. 1916, A.M. 1918, The University of Nebraska
Philosophy, Zoology

Candidates for the Degree of Master of Arts

Adams, Mary Annette.....Stella, Iowa
A.B. 1906, University of Iowa
Economics, Sociology

Adams, Oliver Martin.....University Place
A.B. 1916, Kansas Wesleyan University
Sociology

Adamson, Dorothy Evangeline.....University Place
A.B. 1918, The University of Nebraska
Political Science

Alder, Homer Everett.....University Place
A.B. 1920, Nebraska Wesleyan University
Botany

Allen, Helen.....Auburn
A.B. 1915, Bellevue College
Education

Anderbery, Matilda Christene.....Wakefield
A.B. 1911, The University of Nebraska
English, Education

Anderson, Alice Maybelle.....Ames
A.B. 1921, The University of Nebraska
Botany

Anderson, Arthur.....Lincoln
B.Sc. in Agr. 1916, The University of Nebraska
Agronomy

Anderson, Mildred Johanna.....Lincoln
A.B. 1914, The University of Nebraska
English

Andreason, Eunice.....College View
A.B. 1921, Union College
English, Education

Andreason, Milian Lauritz.....College View
A.B. 1920, The University of Nebraska
History

Andrews, Linn Sherwood.....University Place
B.Sc. in Agr. 1921, The University of Nebraska
Agronomy

Andrews, Mary Caroline.....University Place
A.B. 1916, Kansas Wesleyan University
English

Apperson, Sarah Virginia.....Lincoln
A.B. 1921, Stanford University
English

Axelson, Arthur Edward.....College View
A.B. 1921, Hutchinson Theological Seminary
History, Political Science

Baker, Maddie.....Bethany
A.B. 1918, Cotner University
Education

Barnhill, Gilbert Earl.....Bethany
A.B. 1914, The University of Kansas
Education

Bennison, Isabel ..... Lincoln
B.Sc. in H.E. 1920, The University of Nebraska
Home Economics, Chemistry

Bergman, Anna Margaret ..... College View
A.B. 1911, Union College
Modern Languages

Bishop, Frank Edward ..... University Place
A.B. 1916, Nebraska Wesleyan University
Education

Booth, Ethel Louise ..... University Place
A.B. 1910, Nebraska Wesleyan University
English

Bowen, Virginia Earle ..... Wayne
A.B. 1921, Northwestern University
Modern Languages

Bowers, George Winfield ..... College View
A.B. 1917, Union College
Zoology

Branigan, Marguerite Mary ..... Norfolk
B.Sc. 1914, The University of Nebraska
Education

Bruner, William Edward ..... Red Cloud
B. Sc. in Agr. 1921, The University of Nebraska
Botany

Burley, John Spencer ..... Ainsworth
B.Sc. in B.A. 1921, The University of Nebraska
Education

Butcher, Adelia Patrice ..... Wymore
A.B. 1922, The University of Nebraska
Philosophy

Callender, Edith May ..... York
A.B. 1915, York College
English

Carstens, Edward Everett ..... Fremont
A.B. 1920, Oberlin College
Education

Chamberlin, Frances ..... Blue Springs
B.Sc. 1921, The University of Nebraska
Botany

Chladek, Anna Stacia ..... Niobrara
A.B. 1922, The University of Nebraska
History

Christenson, John Alvin ..... Havelock
A.B. 1919, The University of Nebraska
History

Clark, Grace Maria ..... Lincoln
A.B. 1907, The University of Nebraska
Education

Clark, Orin Ray ..... Lincoln
A.B. 1916, The University of Nebraska
Botany

Clarke, Francis Palmer ..... Denver, Colo.
A.B. 1920, University of Colorado
Philosophy, Sanskrit

Clayburn, Ansel Bennett ..... Lincoln
A.B. 1920, The University of Nebraska
Geology and Geography

Coatman, Gladys Wyvon ..... University Place
A.B. 1919, Nebraska Wesleyan University
English

Congdon, Allan Ray ..... Lincoln
A.B. 1899, The University of Nebraska
Education, Mathematics

Crittenden, Cornelia Williams.....Lincoln
A.B. 1918, The University of Nebraska
Modern Languages

Crozier, Grace Leal.....Osceola
A.B. 1910, Nebraska Wesleyan University
English

Currie, Florence Leona.....Lincoln
A.B. 1911, Bellevue College
Ancient Languages

Dale, Raymond Elmer.....Lincoln
A.B. 1906, The University of Nebraska
Education

Dawson, Ralph Ward.....Lincoln
B.Sc. 1912, The University of Nebraska
Entomology

Day, Alice Ellen.....Omaha
A.B. 1915, The University of Nebraska
Education

Deal, Roy Walter.....University Place
A.B. 1917, Nebraska Wesleyan University
Education

Delano, Clarissa Rose.....Lincoln
A.B. 1917, The University of Nebraska
Political Science

Dillon, Roy Arthur.....Havelock
B.Sc. 1920, Northwestern University
Education

Dilworth, Cora Williams.....Lincoln
A.B. 1916, The University of Nebraska
Modern Languages

Dollinger, G. Glen.....Redfield, S. Dak.
A.B. 1920, Clinton Forge Seminary
Education

Drebert, Eleanor.....Lincoln
B.F.A. 1921, The University of Nebraska
Modern Languages

Duff, Anna Almeda.....Lincoln
A.B. 1915, The University of Colorado
Mathematics

Duncan, James Floyd.....Bethany
A.B. 1903, The University of Nebraska
Education

Dunn, Ethel Mamie.....Lincoln
A.B. 1915, William and Vashti College
English, Philosophy

Dunten, Wesley Lewis.....Lewiston
A.B. 1916, The University of Nebraska
Education

Eller, Margery Likely.....Hastings
A.B. 1921, Hastings College
English, Education

Engle, Earl Theron.....University Place
A.B. 1921, Nebraska Wesleyan University
Zoology

Freer, Nell Lorraine.....College View
B.F.A. 1921, The University of Nebraska
Dramatics

Frerichs, Edward Abraham.....Talmage
B.Sc. in Agr. 1921, The University of Nebraska
Rural Economics

Fuchs, Gustave Otto.....Lincoln
A.B. 1912, The University of Nebraska
Modern Languages

Gay, Helen Lucile.....University Place
A.B. 1921, Nebraska Wesleyan University
Modern Languages

Gerber, Christopher Jacob.....Ashland
A.B. 1917, Goshen College
Agricultural Education

Gies, Katharine Elizabeth.....Lincoln
A.B. 1921, The University of Nebraska
Modern Languages

Gilmore, Leona May.....Red Oak, Iowa
A.B. 1920, The University of Nebraska
Botany, Education

Girard, Madeline .....Lincoln
A.B. 1919, The University of Nebraska
Physical Education

Golden, Clear Clement .....Lincoln
A.B. 1916, The University of Nebraska
Modern Languages

Gould, Marienne Grant .....Lincoln
A.B. 1921, The University of Nebraska
English, Education

Grossnickle, Russell Lowell.....Lincoln
A.B. 1915, Manchester College
Mathematics

Grubb, Amy Shively .....Lincoln
A.B. 1899, The University of Nebraska
English

Guenther, John Joseph .....Holdrege
B.Sc. 1916, Dakota Wesleyan University
Education

Hager, Walter Elsworth.....Adams
B.Sc. 1916, University of Nebraska
Education

Halbersleben, Helen .....Lincoln
A.B. 1920, The University of Nebraska
Education

Hansen, Ethel Bell .....Grand Island
A.B. 1916, Grand Island College
Chemistry

Hansen, George Garfield .....Aurora
A.B. 1918, The University of Nebraska
Education

Harmon, Margaret Athanissa .....Lincoln
A.B. 1921, The University of Nebraska
Sociology

Haskins, Charles Eugene .....Pierre, S. Dak.
A.B. 1917, Nebraska Wesleyan University
Education

Hayes, Dorris Wanda.....Lincoln
A.B. 1921, The University of Nebraska
Botany

Herrmann, Walter Wesley .....Lincoln
A.B. 1920, Central Wesleyan College
Chemistry

Hodam, Cecil Irene.....Lincoln
B.F.A. 1921, The University of Nebraska
Education

Holaday, Lillie Maurine.....Lincoln
B.Sc. 1900, Union College
Education

Hollingsworth, Austin Jerome.....Lincoln
A.B. 1907, Cotner University
Sociology

Holmberg, Addie Elvira ..... Chadron
A.B. 1895, Cotner University
Education

Holt, Nellie Lee ..... Falls City
A.B. 1921, St. Mary's College
English

Hoppel, Gilbert Sage ..... North Loup
B.Sc. 1911, A.B. 1915, Fremont Normal
Education

Howard, Marguerite ..... Lincoln
A.B. 1920, The University of Nebraska
English

Howe, Thomas Dudley ..... Table Rock
B.Sc. 1921, The University of Nebraska
Botany

Hult, Selma Amanda ..... Lincoln
A.B. 1919, The University of Nebraska
English

Huxford, Walter Scott ..... Pawnee City
A.B. 1917, Doane College
Physics

Ireland, William Burrus ..... Madison
A.B. 1919, The University of Nebraska
Education

Jacobson, Ralph Albert ..... Lincoln
Ph.G. 1916, Creighton University; B.Sc. 1918, University of Nebraska
Chemistry

Janes, William Charles ..... Evanston
B.Sc. 1919, Northwestern University
Mathematics

Jenkins, Margaret Bell ..... Lincoln
A.B. 1919, Union College
Modern Languages

Jensen, Anton Henry ..... Blair
A.B. 1920, The University of Nebraska
Modern Languages

Jeter, Lillian Clair ..... Lincoln
B.Sc. 1916, Kansas State Agricultural College
English

Johnson, Barton A. ..... Bethany
A.B. 1921, Cotner University
Sociology, Philosophy

Johnson, Harry Prescott ..... Havelock
A.B. 1921, The University of Nebraska
History

Johnson, Lilas ..... Bethany
A.B. 1920, Cotner University
Education

Jones, Lina Grace ..... Lincoln
A.B. 1920, The University of Nebraska
English

Judkins, Jeanette Milrae ..... Lincoln
A.B. 1918, The University of Nebraska
English

Kelly, Cardinal Lyle ..... University Place
Ph.B. 1921, University of Chicago
Economics

Kelly, Eric Todd ..... Atkinson
A.B. 1920, The University of Nebraska
Education

King, Ruth Ball ..... Kearney
A.B. 1921, The University of Nebraska
Education

Kinney, Beulah Grace.....Crete
A.B. 1920, Doane College
History

Kirk, Everett Donald.....College View
A.B. 1920, Union College
History

Knowlton, Lester Ozro.....Enterprise, Kans.
A.B. 1917, Union College
Education

Kreizenbeck, Frank .....Chadron
A.B. 1912, Chadron State Normal
Education, Modern Languages

Kuehne, Freda Christine.....Lincoln
A.B. 1922, The University of Nebraska
Botany

Lawrence, Esther Joy .....Lincoln
A.B. 1914, Anderson College
Modern Languages

Lawson, Homer Cleveland .....Omaha
B.Sc. in Med. 1922, The University of Nebraska
Physiology, Biochemistry

Leger, Frank Wesley.....Lincoln
A.B. 1918, Peru State Normal
Education

Lehman, Edward D. .....Sutherland
A.B. in Agr. 1921, The University of Nebraska
Education

Leonard, Jack Chester.....Lincoln
A.B. 1921, Cotner University
English

Lilliefors, Manfred Jr. .....Lincoln
A.B. 1920, The University of Nebraska
Sociology

Lindgren, Lawrence Frithof .....Lincoln
B.Sc. in Agr. 1921, The University of Nebraska
Bacteriology and Pathology

Linn, Henry Harold.....Laurel
A.B. 1918, Peru State Normal
Education

Linton, Clarence .....Lyons
A.B. 1919, Wayne State Normal
Education

Lipetz, Elijah Yekusiel.....Lincoln
B.Sc. 1921, The University of Nebraska
Botany

Lockman, Zetta .....College View
A.B. 1921, The University of Nebraska
English, Education

Luedke, Louise Marie .....Oshkosh
A.B. 1918, Kearney State Normal
Education

Lund, Frederick Hansen .....Lincoln
A.B. 1921, The University of Nebraska
Philosophy

Lundeen, Ernest Warren .....Keene
A.B. 1919, The University of Nebraska
Sociology, Political Science

McClure, Frank Donald .....Lincoln
B.Sc. 1911, Kansas Agricultural College
Rural Economics

McGee, Ruby Dell .....College View
A.B. 1913, The University of Nebraska
Mathematics

McLain, Grace Norris ..... University Place
A.B. 1912, The University of Nebraska
Philosophy

McLaren, Donald Wilson ..... Gibbon
B.Sc. 1921, The University of Nebraska
Chemistry

Mapes, Charles Boyd ..... Bethany
B.E. 1907, Peru State Normal; A.B. 1920, The University of Nebraska
Education

Marsh, Stanley Braithwaite ..... Lincoln
A.B. 1915, The University of Nebraska
Mathematics

Martin, Harry Mathias ..... Lincoln
V.M.D. 1916, University of Pennsylvania
Zoology

Mayer, Belle ..... King City, Mo.
A.B. 1915, B.Sc. 1915, University of Missouri
Home Economics

Mengers, Viggo Julius Alfred Christiansen ..... Lincoln
B.D. 1897, Lutheran Seminary
Philosophy

Meserve, Frank G. ..... Grand Island
A.B. 1921, The University of Nebraska
Zoology

Minteer, Claude Clinton ..... Lincoln
B.Sc. 1916, Iowa State College
Education, Rural Economics

Moeller, Herbert Fred William ..... Lincoln
A.B. 1919, Concordia Theological Seminary
English, History

Montgomery, Ivil James ..... DeWitt
A.B. 1916, The University of Nebraska
Education

Mortensen, Marion Richard ..... Fremont
A.B. 1921, Midland College
Physics

Moss, Joseph Allen ..... Bethany
A.B. 1918, Cotner University
Chemistry

Muilenburg, James ..... Lincoln
A.B. 1920, Hope College
English History, English

Mulac, Jaroslav ..... Omaha
A.B. 1920, The University of Nebraska
Education

Nelson, Christian Gravensen ..... Gresham
A.B. 1909, Kansas Christian College; A.M. 1910, University of Kansas
History

Ogden, Benjamin Earl ..... Lincoln
A.B. 1913, Cotner University
Education, English

Osterhout, Josie York ..... Bethany
A.B. 1915, Cotner University
English

Park, Helen ..... Neodesha, Kans.
B.Sc. 1920, Ottawa University
Zoology

Pearson, James Hurt ..... Lincoln
B.Sc. 1919, University of Missouri
Education

Pendleton, Paul Eugene ..... Lincoln
Ph.B. 1920, Denison University
English

Pettis, Dorothy Bradford ..... Lincoln
A.B. 1919, The University of Nebraska
Modern Languages

Pickwell, Gayle Benjamin ..... Murdock
A.B. 1921, The University of Nebraska
Zoology

Plumb, Charles Edward ..... College View
A.B. 1913, Union College
Chemistry

Power, Julia Agnes ..... Sioux City, Iowa
A.B. 1918, The University of Nebraska
English, Education

Priestley, Esther Sill ..... Doniphan
A.B. 1919, Nebraska Wesleyan University
Education, Economics

Priestley, William Clarkson ..... Doniphan
A.B. 1918, Nebraska Wesleyan University
Education

Pringle, Ernest Eugene ..... Seneca, Kans.
A.B. 1909, Emanuel Missionary College
Education

Reed, Florence ..... Lincoln
A.B.1920, The University of Nebraska
English, History

Reed, Harry Lee ..... Beaver Crossing
A.B. 1920, The University of Nebraska
History

Rennolds, Closson Elansen ..... Formosa, Kans.
A.B. 1917, Colorado State Teachers College
Education

Rigdon, Vera Esta ..... Lincoln
A.B. 1921, The University of Nebraska
Geology and Geography

Roberts, Carrie Sallie ..... Soddy, Tenn.
A.B. 1921, The University of Nebraska
History

Robey, Blanche Knowlton ..... Lincoln
A.B. 1918, A.M. 1922, The University of Nebraska
Education, English

Robinson, Gertrude Mae ..... University Place
A.B. 1917, Nebraska Wesleyan University
History

Rolofson, Pearl ..... Lincoln
A.B. 1914, The University of Nebraska
Mathematics, German

Rosene, Windom Alfonso ..... Callaway
A.B. 1912, Grand Island College
Education

Selby, John Hanna ..... Omaha
A.B. 1914, University of Omaha
Education

Sell, David ..... Lincoln
B.Sc. in B.A. 1921, The University of Nebraska
Education

Sherman, Nettie Parminter ..... Bethany
A.B. 1914, Cotner University
Education

Showalter, John Francis ..... Lincoln
A.B. 1919, The University of Nebraska
Political Science

Shultz, John Floid.....Lincoln
B.Sc. 1918, The University of Nebraska
Chemistry

Skudler, Rose Arlene.....Lincoln
A.B. 1920, The University of Nebraska
English, History

Smith, Edwin Erwin.....Bethany
A.B. 1907, Cotner University
Zoology

Smith, Floy Hermione Caldwell.....Lincoln
A.B. 1919, Nebraska Wesleyan University
English, Education

Smith, Harry Herbert.....Lincoln
B.Sc. in Agr. 1920, The University of Nebraska
Animal Husbandry, Education

Smith, Lulu Harding.....Bethany
A.B. 1906, Cotner University
Education, Home Economics

Smith, Roy Milton.....Blue Springs
B.Sc. 1912, Albright College
English

Soper, Wayne Wellington.....Eagle
A.B. 1914, York College
Education

Sourber, James David.....Lincoln
A.B. 1919, Lehigh University
Modern Languages

Spangler, Frank Albert.....College View
A.B. 1921, Union College
Education

Spear, Julia Matilda.....Lincoln
A.B. 1912, The University of Nebraska
Geography, Education

Spease, Perry Martin.....Loynton, S. D.
A.B. 1909, The University of Nebraska
Education

Stevens, Charles Franklin.....Bethany
A.B. 1896, Central Christian College
Philosophy, English

Stewart, Paul Hesden.....Lincoln
B.Sc. 1916, The University of Nebraska
Agronomy

Stille, Sue .....Lincoln
A.B. 1921, The University of Nebraska
English

Stout, Humbert Gambetta .....St. Paul
A.B. 1914, Nebraska Wesleyan University
Education

Stowell, Elbridge Zebina.....Lincoln
B.Sc. 1921, Tufts College
Physics

Taylor, Elbert Lloyd.....Lincoln
B.Sc. in Agr. 1915, The University of Nebraska
Farm Management, Economics

Thaden, John Fred.....Randolph
B.Sc. in Agr. 1920, The University of Nebraska
Sociology, Education

Thomas, Dwight Phillips .....Lincoln
A.B. 1918, The University of Nebraska
Education

Thompson, Helen Mary.....Lincoln
A.B. 1918, The University of Nebraska
English

Tyler, Tracy Ferris.....Valparaiso
A.B. 1916, Doane College
Education

Wagey, Pearl Alice.....Havelock
A.B. 1913, The University of Nebraska
Education

Walsh, Anastasia .....Missouri Valley, Ia.
A.B. 1918, The University of Nebraska
English, Education

Waters, Helen Margaret.....Lincoln
A.B. 1921, The University of Nebraska
Education

Waters, Mary .....Lincoln
A.B. 1920, The University of Nebraska
Zoology

Weaver, Ernest Levi .....Clarinda, Iowa
A.B. 1895, Nebraska Wesleyan University
Education, History

West, Parl .....Norfolk
A.B. 1921, The University of Nebraska
Education

Westermeyer, Harry Edward.....College View
A.B. 1917, Clinton Theological Seminary
English

Westermeyer, Lottie May.....College View
A.B. 1919, Union College
English, Education

Williams, Howard Hearne .....College View
A.B. 1922, Union College
Education

Wilson, Florence Sue.....Lincoln
A.B. 1912, The University of Nebraska
Geology and Geography

Winter, Sarah Adelia.....Lincoln
A.B. 1910, Park College
English

Wolfanger, Louis Albert.....Lincoln
A.B. 1918, The University of Nebraska
Conservation, Geography

Wolfe, William Luther.....Lincoln
A.B. 1921, The University of Nebraska
Education, Mathematics

Woodburn, Mary Edith.....Lincoln
A.B. 1917, The University of Nebraska
Education

Woods, Lucille .....Lincoln
A.B. 1921, The University of Nebraska
English, Education

Wright, Florence Warren.....Lincoln
A.B. 1922, The University of Nebraska
Mathematics, Physics

Candidates for the Degree of Master of Science

Byerley, Edward Tobian.....Turleville, Iowa
B.Sc. 1918, Virginia Polytechnic Institute
Agricultural Engineering

Carr, Ida Lilyard .....Lincoln
B.Sc. 1920, The University of Nebraska
Chemistry

Engle, Eldon B. .....University Place
A.B. 1920, The University of Nebraska
Agronomy

Engstrom, Harold Enoch.....McPherson, Kans.
A.B. 1920, McPherson College
Agronomy, Geology

Farrall, Arthur William.....Harvard
B.Sc. in Agr. 1921, The University of Nebraska
Agricultural Engineering

Goodding, Thomas Homer.....Lincoln
B.Sc. in Agr. 1916, The University of Nebraska
Agronomy

Haykin, David Judson.....Omaha
A.B. 1921, The University of Nebraska
Education

Hubbard, William Glenn.....Lincoln
B.Sc. 1920, The University of Nebraska
Chemistry

Jensen, Frederick Wilhelm.....Blair
B.Sc. 1920, The University of Nebraska
Chemistry

Kramer, Joseph.....Lincoln
B.Sc. in Agr. 1921, The University of Nebraska
Botany

Leuck, Gerald John.....Lincoln
A.B. 1921, The University of Nebraska
Chemistry

McLaren, Donald Wilson.....Gibbon
B.Sc. 1921, The University of Nebraska
Chemistry

Sandstedt, Rudolph Marion.....Lincoln
B.Sc. 1920, The University of Nebraska
Chemistry

Sprague, Howard Bennett.....University Place
B.Sc. in Agr. 1921. The University of Nebraska
Agronomy

Stubblefield, Henry Ingham.....Crete
B.Sc. 1920, South East Missouri State Teachers College
Chemistry

Stutzman, Milo J.....McPherson, Kans.
A.B. 1920, McPherson College
Chemistry

Timpe, Conrad Christophel.....Fremont
B.Sc. in Agr. 1921, The University of Nebraska
Economics

Waller, James Augustus, Jr.....Hebron, Md.
B.Sc. 1918, Virginia Polytechnic Institute
Agricultural Engineering

Walrod, Guy William.....Lincoln
B.Sc. in C.E. 1918, The University of Nebraska
Civil Engineering

Werner, Harvey Oscar.....Lincoln
B.Sc. 1913, State College of Pennsylvania
Horticulture

Whyman, Lawrence Oliver.....Lincoln
A.B. 1920, The University of Nebraska
Geology and Geography

Zimmerman, Naomi Bertha.....Lincoln
B.Sc. 1919, The University of Nebraska
Chemistry

Candidate for the Degree of Civil Engineer

Glover, Robert Ellsworth.....Ord
B.Sc. in C.E. 1921, The University of Nebraska

Candidates for the Degree of Mechanical Engineer

Abraham, Arthur Henry.....Fremont
B.Sc. 1917, Coe College

Zetterman, Harry Leonard.....Chanute, Kans.
B.Sc. in M.E. 1917, The University of Nebraska

Candidate for the Degree of Master of Science in Civil Engineering

Walrod, Guy William.....Lincoln
B.Sc. in C.E. 1918, The University of Nebraska

Candidate for the Degree of Master of Science in Electrical Engineering

Smalley, Oscar Duane.....Lincoln
B.Sc. in E.E. 1920, The University of Nebraska

Graduate Students Without Reference to Degree

Alexis, Tekla Ida Louise.....Lincoln
A.B. 1918, The University of Nebraska

Allen, Stanton.....Lincoln
A.B. 1907, Nebraska Wesleyan University

Anderson, Myron.....Omaha
B.Sc. in B.A. 1921, The University of Nebraska

Anderson, Paul Alexander.....Bellwood
A.B. 1920, The University of Nebraska

Arnold, Frieda Elisabeth.....Lincoln
A.B. 1912, The University of Nebraska

Bailey, Veda Aseinith.....Lincoln
B.Sc. in H.E. 1916, The University of Nebraska

Baliman, Vorha May.....St. Libory
A.B. 1919, Grand Island College; B.S. 1920, Ottawa University

Bankson, Henrietta.....Ohiowa
A.B. 1905, The University of Nebraska

Bedell, Ralph Benjamin.....Fairmont
A.B. 1920, Peru State Normal

Bentz, Ethel Fern.....Fairfield
B.Sc. 1918, The University of Nebraska

Berger, Dan Henry.....York
A.B. 1917, York College

Blakeslee, Thomas Alvara.....Bethany
B.Ph. 1916, The University of Chicago

Blunk, Ella.....Grand Island
A.B. 1917, The University of Nebraska

Blythe, Alma May.....University Place
A.B. 1917, Nebraska Wesleyan University

Boggs, Georgia Mae.....Lincoln
B.F.A. 1918, The University of Nebraska

Boon, George Thomas.....Randolph
B.Sc. 1917, The University of Missouri

Bowers, Hazel Ardell.....York
A.B. 1918, York College

Bowman, Oscar Rufus.....Ewing
B.Sc. 1894, The University of Nebraska

Brackman, Anna Christine.....Minatare
A.B. 1920, Chadron State Normal

Butterworth, Joseph.....Lincoln
A.M. 1921, Brown University

Callen, Earnest Glenn ..... McCook
A.B. 1919, Nebraska Wesleyan University

Cameron, Anna Margharetta ..... Lincoln
A.B. 1915, A.M. 1920, The University of Nebraska

Carmichael, Edith Lois ..... College View
A.B. 1916, Kalamazoo College

Chamberlin, Ramona ..... Blue Springs
B.Sc. 1921, The University of Nebraska

Church, Harold Lincoln ..... University Place
B.Sc. 1921, The University of Nebraska

Clark, Lucy May ..... Chadron
A.B. 1903, The University of Nebraska

Cloyd, Augustus David ..... Omaha
A.B. 1920, Amherst College

Connolly, Mary ..... Fremont
B.S. 1916, Fremont College; A.B. 1922, The University of Nebraska

Cooley, Frieda Florence ..... Lincoln
A.B. 1917, The University of Nebraska

Coombs, Irma Wolfe ..... Lincoln
B.F.A. 1920, The University of Nebraska

Cullen, Ernst Glenn ..... University Place
A.B. 1919, Nebraska Wesleyan; A.M. 1921, The University of Nebraska

Darlington, George Mark ..... University Place
B.Sc. in B.A. 1921, The University of Nebraska

Davis, Morgan Dewey ..... Hyannis
B.Sc. in Agr. 1920, The University of Nebraska

DeBaufre, William Lane ..... Lincoln
E.E. 1907, M.E. 1909, M.Sc. 1919, Lehigh University

Dennis, Lemo Theressa ..... University Place
B.Sc. 1919, The University of Nebraska

Dennis, Rosa Isabelle ..... Lincoln
B.P. 1918, Peru State Normal

Douglas, Mary Helen ..... Holdrege
B.Sc. 1921, Hastings College

Druse, Ethlyne May ..... Cambridge
B.Sc. in H.E. 1920, The University of Nebraska

Enochs, Louise Jane ..... Sheridan, Wyo.
B.Sc. in H.E. 1919, The University of Nebraska

Frundell, Helen Amelia ..... Crete
A.B. 1920, Doane College

Gettys, Flora Frances ..... University Place
A.B. 1918, The University of Nebraska

Gordon, Dorothy Thelma ..... Lincoln
A.B. 1920, The University of Nebraska

Graham, Blanche ..... Lincoln
B.Sc. in H.E. 1918, The University of Nebraska

Greene, Sarah Virginia ..... Red Cloud
A.B. 1906, The University of Nebraska

Gregory, Mary Alberta ..... Crete
A.B. 1919, The University of Nebraska

Groat, Lincoln S. ..... North Loup
A.B. 1893, The University of Nebraska

Hamilton, Leon Sutton ..... Wahoo
B.Sc. in C.E. 1919, The University of Nebraska

Hanthorn, Mattie Alice ..... Lincoln
A.B. 1915. The University of Nebraska

Haskell, Zerma Mae ..... Lincoln
A.B. 1920, Nebraska Wesleyan University

Heine, Myra Irene.....Lincoln
B.Sc. in H.E. 1917, The University of Nebraska

Hibbs, Clara May .....Bethany
A.B. 1920, The University of Nebraska

Hobson, Claude Vivian .....Albion
A.B. 1918, Doane College

Howell, Clarence Everett.....Lincoln
B.Sc. 1917, Millikin University

Howell, Harriett Alice.....Lincoln
P.B. 1895, University of Washington; A.M. 1905, The University of Nebraska

Hrubesky, Lucile .....Geneva
A.B. 1911, The University of Nebraska

Jack, True Adeline .....Lincoln
A.B. 1920, The University of Nebraska

Jillson, Ruth Clara .....Stuart
A.B. 1917, Bellevue College

Johnson, Elvera Anne.....Stromsburg
B.F.A. 1918, The University of Nebraska

Johnson, Jessie Ruth .....Tekamah
B.Sc. in H.E. 1918, The University of Nebraska

Johnson, Joseph Lawrence .....Mead
B.Sc. in Agr. 1918, The University of Nebraska

Knight, Blanche Emily .....Bethany
A.B. 1917, Cotner University

Lantz, Earl William .....Lincoln
A.B.1913, The University of Nebraska

Llewellen, Stella Mae .....Lincoln
A.B. 1919, The University of Nebraska

Loeb, Genevieve Louise .....Lincoln
A.B. 1920, The University of Nebraska

Loomis, Kenneth Hecht.....Lincoln
A.B. 1920, The University of Nebraska

Lowrey, Eleanor Condell .....Lincoln
B.Sc. 1920, The University of Nebraska

McEvan, Eula Grace Davis.....Lincoln
A.B. 1913, A.M. 1914, Ph.D. 1918, The University of Indiana

Martin, Ruth Elizabeth .....Omaha
A.B. 1914, Nebraska Wesleyan University

Mastin, Addie .....Oxford
A.B. 1920, The University of Nebraska

Masurovsky, Benjamin Israel.....Lincoln
B.Sc. 1921, Rutgers College

Matteson, Helen Mary .....Lincoln
A.B. 1916, The University of Nebraska

Melick, Bertha Lucile .....Bethany
A.B. 1912, The University of Nebraska

Mendenhall, Lora Gertrude .....Fairbury
B.Sc. 1919, Kansas Agricultural College

Miller, Hazel Violet .....Wellman, Ia.
A.B. 1920, Iowa State University

Miller, Mabel Harriett .....Farnam
A.B. 1919, Kearney State Normal

Minford, Valentine .....Lincoln
B.Sc. in H.E. 1918, The University of Nebraska

Moore, Eugenia Jeanette .....Lincoln
A.B. 1920, The University of Nebraska

Morledge, Albert Raymond .....Clarinda, Ia.
A.B. 1918, Drake University

Moulton, DeLoss Page ..... Wymore
B.Sc. 1920, The University of Nebraska

Muir, Jennie Catharine ..... York
A.B. 1915, York College

Nichols, Garland ..... Bethany
A.B. 1920, Cotner University

Nichols, Lois Catherine ..... Bethany
A.B. 1919, Cotner University

Nikl, Sylvia Jirina ..... Verdigre
B.F.A. 1921, The University of Nebraska

Noble, Margaret Barclay ..... Ames, Iowa
B.Sc. 1917, Iowa State College

Osterhout, Albert Wesley ..... Bethany
A.B. 1915, Cotner University

O'Sullivan, Margaret Josephine ..... Hutchinson, Kans.
A.B. 1914, The University of Nebraska

Pahl, William Henry ..... Lincoln
B.Sc. 1920, University of Pennsylvania

Parminter, Earl Everett ..... Bethany
A.B. 1918, Cotner University

Peters, Matilda Katherine ..... Lincoln
B.Sc. in H.E. 1917, The University of Nebraska

Peterson, Guy Alfred ..... Cherokee, Iowa
B.Sc. 1918, Iowa State College; M.Sc. 1920, Cornell University

Peterson, Linnea Dorotha ..... Lincoln
A.B. 1921, The University of Nebraska

Peterson, Niels Frederick ..... Lincoln
B.Sc. 1907, A.M. 1911, The University of Nebraska

Petree, Leo Webb ..... Oregon, Mo.
A.B. 1921, The University of Nebraska

Petrie, Benjamin Rankin ..... Broken Bow
B.Sc. 1920, Kansas Agricultural College

Putney, Nelie Ada ..... Lincoln
A.B. 1908, The University of Nebraska

Rankin, John Owen ..... Lincoln
A.B. 1904, Tarkio College; B.S.A. 1908, Iowa State College,
A.M. 1912, George Washington College

Reed, Edward Floyd ..... Lincoln
A.B. 1919, The University of Nebraska

Rummons, Constance ..... Lincoln
A.B. 1916, A.M. 1919, The University of Nebraska

Ryan, Sarah Agnes ..... Havelock
A.B. 1893, A.M. 1910, The University of Nebraska

Rystrom, Ruth Albertine ..... Lincoln
A.B. 1921, The University of Nebraska

Sargent, Mary Alzora Horne ..... Lincoln
B.Sc. 1896, The University of Nebraska

Schembeck, Rebecca Hazel ..... Lincoln
A.B. 1920, The University of Nebraska

Schriever, Fred ..... Dakota City
A.B. 1914, Morningside College; A.M. 1917, The University of Nebraska

Schmale, Freda Louise ..... Lincoln
A.B. 1914, The University of Nebraska

Schofield, Leah Amelia ..... Lincoln
B.Sc. in H.E. 1916; A.B. 1917, The University of Nebraska

Schwaiger, Esther ..... North Platte
A.B. 1920, Kearney State Normal

Sheehan, Elizabeth Anne ..... Lincoln
B.Sc. 1911, Fremont Normal

Smith, Chauncey William ..... Lincoln
B.Sc. in Agr. 1914, The University of Nebraska

Spence, Eva Lena ..... Lincoln
A.B. 1917, Nebraska Wesleyan University

Spence, Mary Anne ..... Lincoln
A.B. 1920, The University of Nebraska

Spurlock, Woodson ..... York
A.B. 1922, The University of Nebraska

Squier, Myrtle Caroline ..... Lincoln
A.B. 1920, The University of Nebraska

Steckelberg, Emma Charlotte ..... Plymouth
A.B. 1909, The University of Nebraska

Stepanek, Orin G. ..... Crete
A.B. 1913, The University of Nebraska

Sullivan, Kathleen Eva L. ..... Casper, Wyo.
A.B. 1921, St. Mary's College

Svoboda, Clement Valdimir ..... St. Paul
A.B. 1918, The University of Nebraska

Theil, Blanche Goodrich ..... Lincoln
A.B. 1917, Baldwin Wallace College

Thorp, Harriette Adeliann ..... Bethany
A.B. 1921, Cotner University

Trump, Earle D. ..... Table Rock
LL.B. 1911, The University of Nebraska

Vail, Nellie Antoinette ..... Lincoln
A.B. 1909, The University of Nebraska

Wagnener, Loren Scott ..... Madrid
A.B. 1919, Nebraska Wesleyan University

Wahlstrom, Eric Herbert ..... Rock Island, Ill.
A.B. 1919, Augustana College

Walker, John Daniel ..... Miller
A.B. 1908, The University of Nebraska; A.M. 1912, Northwestern Uni.

Wallace, Helen Margaret ..... Lincoln
A.B. 1913, The University of Nebraska

Wardman, Floyd Vigars ..... Fairbury
A.B. 1921, The University of Nebraska

Warshaw, Hazel Marie ..... Lincoln
B.Sc. 1921, University of Missouri

Waters, Winifred Bell ..... Lincoln
A.B. 1910, The University of Nebraska

Watson, Julia Parmelia ..... Lincoln
A.B. 1888, Iowa Wesleyan University

Watson, Wesley LeRoy ..... Bethany
A.B. 1910, Cotner University

Wilson, Ida Gillette ..... Lincoln
A.B. 1916, The University of Nebraska

Wilson, Marie Ford ..... University Place
A.B. 1921, B.E. 1921, Nebraska Wesleyan University

Wisherd, Zelma Alice ..... Lincoln
A.B. 1920, The University of Nebraska

Wursch, Alma Lenora ..... Grand Island
A.B. 1915, Union College

Yont, Lily ..... Lincoln
A.B. 1907, The University of Nebraska

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